

LABORATORY DATA CONSULTANTS, INC.

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November 17, 2003

Mr. Bruce Lewis
ERM-West
2525 Natomas Park Drive
Sacramento, CA 95833

SUBJECT: Validation of Data for Soil Samples Collected as Part of the Aerojet RI/FS Project.

Dear Mr. Lewis,

Enclosed are the final validation reports for the analyses listed below.

SDG #

P307257, P307335, P307437,
P307487, P307532, P308004,
P308025, P308035, P308047,
P308051, P308071, P308126,
P308139, P308140, P308192,
P308354, P308355, P308444,
P309311

Analyses

Semivolatiles by EPA Method 8270C, Polychlorinated
Biphenyls by EPA Method 8082, Total Petroleum
Hydrocarbons as Diesel by EPA Method 8015B Modified,
Various Metals by EPA Methods 6010B and 6020,
Mercury by EPA Method 7470A and 7471A, and
Hexavalent Chromium by EPA Method 7196A

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999,
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February, 1994
- Quality Assurance Project Plan, Aerojet Superfund Site, Aerojet-General Corporation, 29 May 2003, and
- Quality Assurance Project Plan, Aerojet Superfund Site, Aerojet-General Corporation, 14 June 2002, Revised 25 September 2002

Please feel free to contact us if you have any questions.

Sincerely,

Nanny Estrada
Senior Chemist

ERM/Aerojet
Data Validation Reports
LDC# 0310-02A2 through 0310-02O2

Semivolatile Organic Compounds

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 14, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307257

Sample Identification

C32-SNS01
C32-SNS02

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The MS/MSD was performed on a non-site project sample. As such, no data were qualified based on these QC results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS
Semivolatiles - Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

Aerojet RI/FS
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

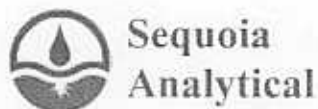
Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Tentatively Identified Compounds by GC/MS Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| C32-SNS01 (P307257-01) Soil Sampled: 07/14/03 09:05 Received: 07/15/03 11:08 | | | | | | | | | | |
| Glycerol tricaprylate | 100 | | | ug/kg | 1 | 3070476 | 07/24/03 | 07/24/03 | EPA 8270C | |
| Stigmast-4-en-3-one | 200 | | | " | " | " | " | " | " | |
| Unknown 1 | 200 | | | " | " | " | " | " | " | |
| Unknown 2 | 200 | | | " | " | " | " | " | " | |
| Unknown alkane (C24-C28 range) | 100 | | | " | " | " | " | " | " | |
| Unknown alkane (C28-C34 range) 1 | 400 | | | " | " | " | " | " | " | |
| Unknown alkane (C28-C34 range) 2 | 500 | | | " | " | " | " | " | " | |
| Unknown alkane (C30-C34 range) | 400 | | | " | " | " | " | " | " | |
| Unknown PAH 1 | 200 | | | " | " | " | " | " | " | |
| Unknown PAH 2 | 600 | | | " | " | " | " | " | " | |
| C32-SNS02 (P307257-02) Soil Sampled: 07/14/03 09:20 Received: 07/15/03 11:08 | | | | | | | | | | |
| Cyclooctacosane | 400 | | | ug/kg | 1 | 3070476 | 07/24/03 | 07/24/03 | EPA 8270C | |
| Hexadecanoic acid, methyl ester | 200 | | | " | " | " | " | " | " | |
| Octadecenoic acid, methyl ester | 400 | | | " | " | " | " | " | " | |
| Sitosterol + Unknown | 600 | | | " | " | " | " | " | " | |
| Unknown 1 | 300 | | | " | " | " | " | " | " | |
| Unknown aldehyde | 200 | | | " | " | " | " | " | " | |
| Unknown alkane (C24-C28 range) | 200 | | | " | " | " | " | " | " | |
| Unknown alkane (C28-C32 range) | 500 | | | " | " | " | " | " | " | |
| Unknown alkane (C30-C34 range) | 500 | | | " | " | " | " | " | " | |
| Unknown PAH 1 | 400 | | | " | " | " | " | " | " | |



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P307257
Reported:
08/19/03 12:17

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|-----------|------------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C32-SNS01 (P307257-01) Soil Sampled: 07/14/03 09:05 Received: 07/15/03 11:08 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070476 | 07/24/03 | 07/24/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 37 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | 40 | 11 | 330 | " | " | " | " | " | " | J |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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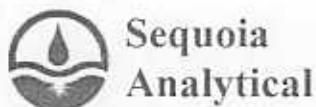
Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|------------|------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C32-SNS01 (P307257-01) Soil Sampled: 07/14/03 09:05 Received: 07/15/03 11:08 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3070476 | 07/24/03 | 07/24/03 | EPA 8270C | |
| Fluoranthene | 110 | 11 | 330 | " | " | " | " | " | " | J |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | 170 | 14 | 330 | " | " | " | " | " | " | J |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | 64 | 12 | 330 | " | " | " | " | " | " | J |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 50 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 67 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 61 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 72 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 81 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 80 % | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

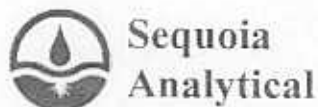
Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|------------|------------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C32-SNS02 (P307257-02) Soil Sampled: 07/14/03 09:20 Received: 07/15/03 11:08 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070476 | 07/24/03 | 07/24/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 150 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | 37 | 11 | 330 | " | " | " | " | " | " | J |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|-----------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C32-SNS02 (P307257-02) Soil Sampled: 07/14/03 09:20 Received: 07/15/03 11:08 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3070476 | 07/24/03 | 07/24/03 | EPA 8270C | |
| Fluoranthene | 38 | 11 | 330 | " | " | " | " | " | " | J |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | 36 | 12 | 330 | " | " | " | " | " | " | J |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 50 % | 11-120 | | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 69 % | 16-130 | | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 65 % | 16-126 | | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 74 % | 28-134 | | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 84 % | 51-144 | | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 80 % | 64-119 | | | | " | " | " | " | |

NE
11/17/03

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: July 21, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307437

Sample Identification

FCS-SB01-2.5
FCS-SB01-20
10D-SB03-2.5

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits. As the MS/MSD was performed on a parent sample that was not chosen for validation, no data were qualified based on these QC results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS
Semivolatiles - Data Qualification Summary - SDG P307437

No Sample Data Qualified in this SDG

Aerojet RI/FS
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307437

No Sample Data Qualified in this SDG



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Environmental Resources Management
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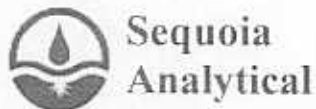
Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Tentatively Identified Compounds by GC/MS
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| FCS-SB01-2.5 (P307437-01) Soil Sampled: 07/21/03 09:59 Received: 07/21/03 16:41 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/01/03 | EPA 8270C | |
| FCS-SB01-5 (P307437-02) Soil Sampled: 07/21/03 10:05 Received: 07/21/03 16:41 | | | | | | | | | | |
| Sulfur, mol. (S8) | 100 | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/01/03 | EPA 8270C | |
| FCS-SB01-10 (P307437-03) Soil Sampled: 07/21/03 10:15 Received: 07/21/03 16:41 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/01/03 | EPA 8270C | |
| FCS-SB01-15 (P307437-04) Soil Sampled: 07/21/03 10:20 Received: 07/21/03 16:41 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| FCS-SB01-20 (P307437-05) Soil Sampled: 07/21/03 10:27 Received: 07/21/03 16:41 | | | | | | | | | | |
| No TICs found | ND | | 9 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| 10D-SB03-1 (P307437-06) Soil Sampled: 07/21/03 12:52 Received: 07/21/03 16:41 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/01/03 | EPA 8270C | |
| 10D-SB03D-1 (P307437-07) Soil Sampled: 07/21/03 12:52 Received: 07/21/03 16:41 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| 10D-SB03-2.5 (P307437-08) Soil Sampled: 07/21/03 12:58 Received: 07/21/03 16:41 | | | | | | | | | | |
| Tebuthiuron | 200 | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Unknown alkane 1 | 200 | | 10 | " | " | " | " | " | " | |
| Unknown alkane 2 | 100 | | 10 | " | " | " | " | " | " | |
| Unknown alkane 3 | 100 | | 10 | " | " | " | " | " | " | |
| Unknown cycloalkane 1 | 100 | | 10 | " | " | " | " | " | " | |
| Unknown cycloalkane 2 | 200 | | 10 | " | " | " | " | " | " | |

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Environmental Resources Management
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Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

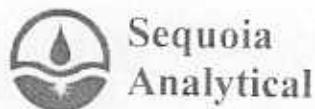
Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|-----------|------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| FCS-SB01-2.5 (P307437-01) Soil Sampled: 07/21/03 09:59 Received: 07/21/03 16:41 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/01/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 64 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
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Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| FCS-SB01-2.5 (P307437-01) Soil Sampled: 07/21/03 09:59 Received: 07/21/03 16:41 | | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/01/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 68 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 79 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 79 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 85 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 97 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 105 % | | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
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Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|-----------|--------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| FCS-SB01-15 (P307437-04) Soil Sampled: 07/21/03 10:20 Received: 07/21/03 16:41 | | | | | | | | | | |
| Surrogate: Phenol-d6 | 81 % | 16-130 | | | | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Surrogate: Nitrobenzene-d5 | 83 % | 16-126 | | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 85 % | 28-134 | | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 95 % | 51-144 | | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 110 % | 64-119 | | | | " | " | " | " | |
| FCS-SB01-20 (P307437-05) Soil Sampled: 07/21/03 10:27 Received: 07/21/03 16:41 | | | | | | | | | | |
| Acenaphthene | ND | 7.5 | 280 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Acenaphthylene | ND | 6.6 | 280 | " | " | " | " | " | " | |
| Anthracene | ND | 12 | 280 | " | " | " | " | " | " | |
| Azobenzene | ND | 17 | 280 | " | " | " | " | " | " | |
| Benzidine | ND | 1500 | 1500 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.3 | 1500 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 6.5 | 280 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 12 | 280 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 7.6 | 280 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 8.6 | 280 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 9.6 | 570 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 7.8 | 280 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 13 | 280 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 13 | 280 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 31 | 8.0 | 280 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 11 | 280 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 9.7 | 280 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 50 | 570 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 9.3 | 570 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 8.5 | 280 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 14 | 280 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 11 | 280 | " | " | " | " | " | " | |
| Chrysene | ND | 9.3 | 280 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 16 | 280 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 8.2 | 280 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 10 | 280 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 14 | 280 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 12 | 280 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 13 | 280 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 38 | 570 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| FCS-SB01-20 (P307437-05) Soil Sampled: 07/21/03 10:27 Received: 07/21/03 16:41 | | | | | | | | | | |
| 2,4-Dichlorophenol | ND | 13 | 280 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Diethyl phthalate | ND | 12 | 280 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 31 | 280 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 9.7 | 280 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 15 | 1500 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 8.8 | 1500 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 17 | 280 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 12 | 280 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 9.7 | 280 | " | " | " | " | " | " | |
| Fluoranthene | ND | 9.7 | 280 | " | " | " | " | " | " | |
| Fluorene | ND | 6.8 | 280 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 13 | 280 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 15 | 280 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 8.6 | 280 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 15 | 280 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 9.6 | 280 | " | " | " | " | " | " | |
| Isophorone | ND | 12 | 280 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 8.8 | 280 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 14 | 280 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 9.8 | 280 | " | " | " | " | " | " | |
| Naphthalene | ND | 12 | 280 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 15 | 1500 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 15 | 1500 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 19 | 1500 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 14 | 280 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 12 | 280 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 20 | 1500 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 14 | 280 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 14 | 280 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 13 | 280 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 10 | 1500 | " | " | " | " | " | " | |
| Phenanthrene | ND | 12 | 280 | " | " | " | " | " | " | |
| Phenol | ND | 11 | 280 | " | " | " | " | " | " | |
| Pyrene | ND | 10 | 280 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 13 | 280 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 12 | 280 | " | " | " | " | " | " | |

ME
11/17/03



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Petaluma, CA 94954
(707) 792-1865
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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| FCS-SB01-20 (P307437-05) Soil Sampled: 07/21/03 10:27 Received: 07/21/03 16:41 | | | | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 8.1 | 280 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Surrogate: 2-Fluorophenol | | 71 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 80 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 86 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 87 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 93 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 107 % | 64-119 | | | " | " | " | " | |
| 10D-SB03-1 (P307437-06) Soil Sampled: 07/21/03 12:52 Received: 07/21/03 16:41 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/01/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

ME
11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SB03D-1 (P307437-07) Soil Sampled: 07/21/03 12:52 Received: 07/21/03 16:41 | | | | | | | | | | |
| Pentachlorophenol | ND | 12 | 1700 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 59 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 71 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 77 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 74 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 65 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 98 % | | 64-119 | | | " | " | " | " | |
| 10D-SB03-2.5 (P307437-08) Soil Sampled: 07/21/03 12:58 Received: 07/21/03 16:41 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 49 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SB03-2.5 (P307437-08) Soil Sampled: 07/21/03 12:58 Received: 07/21/03 16:41 | | | | | | | | | | |
| Chrysene | ND | 11 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307437
Reported:
08/13/03 16:24

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SB03-2.5 (P307437-08) Soil Sampled: 07/21/03 12:58 Received: 07/21/03 16:41 | | | | | | | | | | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 60 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 72 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 73 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 83 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 91 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 97 % | 64-119 | | | " | " | " | " | |
| 10D-SB03-5 (P307437-09) Soil Sampled: 07/21/03 13:06 Received: 07/21/03 16:41 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 24, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307487
Sample Identification
35D-SB25-2.5

Introduction

This data review covers one soil sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The MS/MSD was performed on a non-site project sample. As such, no data were qualified based on these QC results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Semivolatiles - Data Qualification Summary - SDG P307487

No Sample Data Qualified in this SDG

Aerojet RI/FS

Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307487

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307487
Reported:
08/13/03 16:30

Tentatively Identified Compounds by GC/MS
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB25-2.5 (P307487-12) Soil Sampled: 07/24/03 10:49 Received: 07/24/03 16:30 | | | | | | | | | | |
| Unknown aromatic 1 | 1000 | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Unknown aromatic 2 | 700 | | 10 | " | " | " | " | " | " | |
| Unknown aromatic 3 | 2000 | | 10 | " | " | " | " | " | " | |
| Unknown aromatic 4 | 700 | | 10 | " | " | " | " | " | " | |
| Unknown cholesterol 1 | 1000 | | 10 | " | " | " | " | " | " | |
| Unknown cycloalkane 1 | 1000 | | 10 | " | " | " | " | " | " | |
| Unknown cycloalkane 2 | 600 | | 10 | " | " | " | " | " | " | |
| Unknown cycloalkane 3 | 1000 | | 10 | " | " | " | " | " | " | |
| Unknown cycloalkane 4 | 200 | | 10 | " | " | " | " | " | " | |
| Unknown halogenated alkane 1 | 300 | | 10 | " | " | " | " | " | " | |
| 35D-SB25-10 (P307487-13) Soil Sampled: 07/24/03 11:11 Received: 07/24/03 16:30 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| 35D-SB25-35 (P307487-14) Soil Sampled: 07/24/03 13:09 Received: 07/24/03 16:30 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| 35D-SB25-40 (P307487-15) Soil Sampled: 07/24/03 13:43 Received: 07/24/03 16:30 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| 35D-SB25-45E (P307487-16) Water Sampled: 07/24/03 14:28 Received: 07/24/03 16:30 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/l | 1 | 3070597 | 07/28/03 | 08/06/03 | EPA 8270C | |
| 35D-SB25-45 (P307487-17) Soil Sampled: 07/24/03 15:15 Received: 07/24/03 16:30 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |

12
11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307487
Reported:
08/13/03 16:30

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|-----------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB25-2.5 (P307487-12) Soil Sampled: 07/24/03 10:49 Received: 07/24/03 16:30 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 60 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | 45 | 11 | 330 | " | " | " | " | " | " | J |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | 58 | 14 | 330 | " | " | " | " | " | " | J |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307487
Reported:
08/13/03 16:30

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB25-2.5 (P307487-12) Soil Sampled: 07/24/03 10:49 Received: 07/24/03 16:30 | | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | ug/kg | 1 | 3070610 | 07/29/03 | 08/02/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 55 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 68 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 68 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 78 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 68 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 82 % | | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307487
Reported:
08/13/03 16:30

Tentatively Identified Compounds by GC/MS - Quality Control

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---------|--------|-----|--------------------|-------|----------------|------------------|------|----------------|-----|--------------|-------|
|---------|--------|-----|--------------------|-------|----------------|------------------|------|----------------|-----|--------------|-------|

Batch 3070597 - EPA 3520B LiqLiquid

Blank (3070597-BLK1)

Prepared: 07/28/03 Analyzed: 08/06/03

No TICs found ND 10 ug/l

Batch 3070610 - EPA 3550A Sonication

Blank (3070610-BLK1)

Prepared: 07/29/03 Analyzed: 08/01/03

No TICs found ND 10 ug/kg

AE
11/17/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 25, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307532

Sample Identification

35D-SB26-6
35D-SB26-11

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS
Semivolatiles - Data Qualification Summary - SDG P307532

No Sample Data Qualified in this SDG

Aerojet RI/FS
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P307532

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307532
Reported:
08/15/03 14:38

**Tentatively Identified Compounds by GC/MS
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB26-6 (P307532-01) Soil Sampled: 07/25/03 16:06 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| 35D-SB26-11 (P307532-02) Soil Sampled: 07/25/03 16:19 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| 35D-SB26-15E (P307532-03) Water Sampled: 07/25/03 16:31 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/l | 1 | 3070657 | 07/30/03 | 08/07/03 | EPA 8270C | |
| 35D-SB26-15 (P307532-04) Soil Sampled: 07/25/03 16:49 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/08/03 | EPA 8270C | |
| 35D-SB26-30 (P307532-06) Soil Sampled: 07/28/03 10:44 Received: 07/28/03 17:25 | | | | | | | | | | |
| Unknown alkane 1 | 300 | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/08/03 | EPA 8270C | |
| 35D-SB26-35 (P307532-07) Soil Sampled: 07/28/03 11:05 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/08/03 | EPA 8270C | |
| 35D-SB26-35D (P307532-08) Soil Sampled: 07/28/03 11:05 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/08/03 | EPA 8270C | |
| 35D-SB26-40 (P307532-09) Soil Sampled: 07/28/03 11:39 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| 35D-SB26-45 (P307532-10) Soil Sampled: 07/28/03 12:02 Received: 07/28/03 17:25 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/kg | 1 | 3070671 | 07/31/03 | 08/08/03 | EPA 8270C | |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
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Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307532
Reported:
08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB26-6 (P307532-01) Soil Sampled: 07/25/03 16:06 Received: 07/28/03 17:25 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307532
Reported:
08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB26-6 (P307532-01) Soil Sampled: 07/25/03 16:06 Received: 07/28/03 17:25 | | | | | | | | | | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | ug/kg | 1 | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 63 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 72 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 76 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 77 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 77 % | | 51-144 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307532
Reported:
08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|--------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB26-6 (P307532-01) Soil Sampled: 07/25/03 16:06 Received: 07/28/03 17:25 | | | | | | | | | | |
| Surrogate: Terphenyl-d14 | 99 % | 64-119 | | | | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| 35D-SB26-11 (P307532-02) Soil Sampled: 07/25/03 16:19 Received: 07/28/03 17:25 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307532
Reported:
08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB26-11 (P307532-02) Soil Sampled: 07/25/03 16:19 Received: 07/28/03 17:25 | | | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | ug/kg | 1 | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 67 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 76 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 80 % | 16-126 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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AE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307532
Reported:
08/15/03 14:38

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB26-11 (P307532-02) Soil Sampled: 07/25/03 16:19 Received: 07/28/03 17:25 | | | | | | | | | | |
| Surrogate: 2-Fluorobiphenyl | 82 % | | 28-134 | | | 3070671 | 07/31/03 | 08/07/03 | EPA 8270C | |
| Surrogate: 2,4,6-Tribromophenol | 85 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 107 % | | 64-119 | | | " | " | " | " | |
| 35D-SB26-15E (P307532-03) Water Sampled: 07/25/03 16:31 Received: 07/28/03 17:25 | | | | | | | | | | |
| Acenaphthene | ND | 1.3 | 11 | ug/l | 1 | 3070657 | 07/30/03 | 08/07/03 | EPA 8270C | |
| Acenaphthylene | ND | 1.5 | 11 | " | " | " | " | " | " | |
| Anthracene | ND | 0.63 | 11 | " | " | " | " | " | " | |
| Azobenzene | ND | 0.66 | 21 | " | " | " | " | " | " | |
| Benzidine | ND | 3.3 | 53 | " | " | " | " | " | " | |
| Benzoic acid | ND | 4.1 | 53 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.46 | 11 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 1.2 | 11 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.67 | 11 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.92 | 11 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 4.1 | 21 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 1.2 | 11 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 1.6 | 11 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 1.6 | 11 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 3.0 | 11 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.74 | 11 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 2.8 | 11 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.58 | 21 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 2.4 | 21 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 1.5 | 11 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.33 | 11 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 1.0 | 11 | " | " | " | " | " | " | |
| Chrysene | ND | 0.47 | 11 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.58 | 11 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 1.2 | 11 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 1.2 | 11 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 1.9 | 11 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 1.9 | 11 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 1.8 | 11 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 3.0 | 21 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.49 | 11 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.44 | 11 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: July 29, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308004
Sample Identification
37D-SB01-6

Introduction

This data review covers one soil sample listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS
Semivolatiles - Data Qualification Summary - SDG P308004

No Sample Data Qualified in this SDG

Aerojet RI/FS
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308004

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308004
Reported:
08/19/03 16:23

Tentatively Identified Compounds by GC/MS

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 35D-SB26-20 (P308004-01) Soil Sampled: 07/28/03 16:15 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/13/03 | EPA 8270C | |
| 35D-SB26-25 (P308004-02) Soil Sampled: 07/28/03 16:42 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/13/03 | EPA 8270C | |
| 37D-SB01-6 (P308004-04) Soil Sampled: 07/29/03 10:39 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/14/03 | EPA 8270C | |
| 37D-SB01-10 (P308004-05) Soil Sampled: 07/29/03 10:46 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/14/03 | EPA 8270C | |
| 37D-SB01-15E (P308004-06) Water Sampled: 07/29/03 11:00 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/l | 1 | 3080056 | 08/05/03 | 08/13/03 | EPA 8270C | |
| 37D-SB01-15 (P308004-07) Soil Sampled: 07/29/03 11:11 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/14/03 | EPA 8270C | |
| 37D-SB01-20 (P308004-08) Soil Sampled: 07/29/03 11:32 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/14/03 | EPA 8270C | |
| 37D-SB01-25 (P308004-09) Soil Sampled: 07/29/03 11:56 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/14/03 | EPA 8270C | |
| 37D-SB01-30 (P308004-10) Soil Sampled: 07/29/03 12:17 Received: 07/29/03 17:05 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080047 | 08/05/03 | 08/13/03 | EPA 8270C | |

AE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308004
Reported:
08/19/03 16:23

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 37D-SB01-6 (P308004-04) Soil Sampled: 07/29/03 10:39 Received: 07/29/03 17:05 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080047 | 08/05/03 | 08/14/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

KE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308004
Reported:
08/19/03 16:23

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 37D-SB01-6 (P308004-04) Soil Sampled: 07/29/03 10:39 Received: 07/29/03 17:05 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3080047 | 08/05/03 | 08/14/03 | EPA 8270C | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 64 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 73 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 74 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 76 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 83 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 108 % | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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LE
11/14/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 30, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308025

Sample Identification

37D-SB01-6
36D-SB01-2.5
36D-SB01-5
36D-SB02-0
36D-SB02-3
36D-SB02-6

Introduction

This data review covers six soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS
Semivolatiles - Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG

Aerojet RI/FS
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Tentatively Identified Compounds by GC/MS

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 37D-SB01-6 (P308025-01) Soil Sampled: 07/30/03 09:52 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/15/03 | EPA 8270C | |
| 36D-SB01-2.5 (P308025-02) Soil Sampled: 07/30/03 12:20 Received: 07/31/03 14:10 | | | | | | | | | | |
| Unknown Alkane | 2000 | | 1000 | ug/kg | 2 | 3080086 | 08/13/03 | 08/15/03 | EPA 8270C | |
| 36D-SB01-5 (P308025-03) Soil Sampled: 07/30/03 12:26 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB01-11 (P308025-04) Soil Sampled: 07/30/03 12:42 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB01-15E (P308025-05) Water Sampled: 07/30/03 12:47 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/l | 1 | 3080056 | 08/05/03 | 08/13/03 | EPA 8270C | |
| 36D-SB01-15 (P308025-06) Soil Sampled: 07/30/03 13:03 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB01-20 (P308025-07) Soil Sampled: 07/30/03 13:27 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB01-25 (P308025-08) Soil Sampled: 07/30/03 13:43 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB01-30 (P308025-09) Soil Sampled: 07/30/03 14:53 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |

AE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

**Tentatively Identified Compounds by GC/MS
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB01-35 (P308025-10) Soil Sampled: 07/30/03 15:12 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB01-40 (P308025-11) Soil Sampled: 07/30/03 15:31 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB01D-40 (P308025-12) Soil Sampled: 07/30/03 15:31 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB02-0 (P308025-13) Soil Sampled: 07/31/03 10:09 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB02-3 (P308025-14) Soil Sampled: 07/31/03 10:23 Received: 07/31/03 14:10 | | | | | | | | | | |
| Sulfur, mol. (S8) | 500 | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB02-6 (P308025-15) Soil Sampled: 07/31/03 10:35 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB02-15E (P308025-16) Water Sampled: 07/31/03 11:04 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 10 | ug/l | 1 | 3080056 | 08/05/03 | 08/13/03 | EPA 8270C | |
| 36D-SB02-15 (P308025-17) Soil Sampled: 07/31/03 11:18 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB02-20 (P308025-18) Soil Sampled: 07/31/03 11:35 Received: 07/31/03 14:10 | | | | | | | | | | |
| No TICs found | ND | | 300 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |

AE
11/14/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|-----------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 37D-SB01-6 (P308025-01) Soil Sampled: 07/30/03 09:52 Received: 07/31/03 14:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/15/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 47 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | 66 | 14 | 330 | " | " | " | " | " | " | J |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

NE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 37D-SB01-6 (P308025-01) Soil Sampled: 07/30/03 09:52 Received: 07/31/03 14:10 | | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/15/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 67 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 76 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 82 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 86 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 90 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 102 % | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

DE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|------------|
| 36D-SB01-2.5 (P308025-02) Soil Sampled: 07/30/03 12:20 Received: 07/31/03 14:10 | | | | | | | | | | R-05, R-06 |
| Acenaphthene | ND | 26 | 990 | ug/kg | 2 | 3080086 | 08/13/03 | 08/15/03 | EPA 8270C | |
| Acenaphthylene | ND | 23 | 990 | " | " | " | " | " | " | |
| Anthracene | ND | 42 | 990 | " | " | " | " | " | " | |
| Azobenzene | ND | 61 | 990 | " | " | " | " | " | " | |
| Benzidine | ND | 5100 | 5100 | " | " | " | " | " | " | |
| Benzoic acid | ND | 8.0 | 5100 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 23 | 990 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 40 | 990 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 27 | 990 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 30 | 990 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 34 | 2000 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 27 | 990 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 46 | 990 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 47 | 990 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 180 | 28 | 990 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 38 | 990 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 34 | 990 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 180 | 2000 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 32 | 2000 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 30 | 990 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 47 | 990 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 38 | 990 | " | " | " | " | " | " | |
| Chrysene | 150 | 32 | 990 | " | " | " | " | " | " | J |
| Dibenz (a,h) anthracene | ND | 55 | 990 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 29 | 990 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | 260 | 35 | 990 | " | " | " | " | " | " | J |
| 1,2-Dichlorobenzene | ND | 48 | 990 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 41 | 990 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 46 | 990 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 130 | 2000 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 44 | 990 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 43 | 990 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 110 | 990 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 34 | 990 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 52 | 5100 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 31 | 5100 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 59 | 990 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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NE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|------------|
| 36D-SB01-2.5 (P308025-02) Soil Sampled: 07/30/03 12:20 Received: 07/31/03 14:10 | | | | | | | | | | R-05, R-06 |
| 2,6-Dinitrotoluene | ND | 40 | 990 | ug/kg | 2 | 3080086 | 08/13/03 | 08/15/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 34 | 990 | " | " | " | " | " | " | |
| Fluoranthene | 160 | 34 | 990 | " | " | " | " | " | " | J |
| Fluorene | ND | 24 | 990 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 46 | 990 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 51 | 990 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 30 | 990 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 52 | 990 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 34 | 990 | " | " | " | " | " | " | |
| Isophorone | ND | 43 | 990 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 31 | 990 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 47 | 990 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 34 | 990 | " | " | " | " | " | " | |
| Naphthalene | ND | 40 | 990 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 52 | 5100 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 54 | 5100 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 67 | 5100 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 49 | 990 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 43 | 990 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 70 | 5100 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 49 | 990 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 50 | 990 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 44 | 990 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 36 | 5100 | " | " | " | " | " | " | |
| Phenanthrene | ND | 41 | 990 | " | " | " | " | " | " | |
| Phenol | ND | 37 | 990 | " | " | " | " | " | " | |
| Pyrene | 180 | 36 | 990 | " | " | " | " | " | " | J |
| 1,2,4-Trichlorobenzene | ND | 46 | 990 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 41 | 990 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 28 | 990 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 42 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 52 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 57 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 67 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 67 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 76 % | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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NE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|-----------|------------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB01-5 (P308025-03) Soil Sampled: 07/30/03 12:26 Received: 07/31/03 14:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | 52 | 2.7 | 1700 | " | " | " | " | " | " | J |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB01-5 (P308025-03) Soil Sampled: 07/30/03 12:26 Received: 07/31/03 14:10 | | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 58 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 67 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 69 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 71 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 83 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 103 % | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB01D-40 (P308025-12) Soil Sampled: 07/30/03 15:31 Received: 07/31/03 14:10 | | | | | | | | | | |
| 2-Nitroaniline | ND | 17 | 1700 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 64 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 73 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 76 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 73 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 82 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 99 % | 64-119 | | | " | " | " | " | |
| 36D-SB02-0 (P308025-13) Soil Sampled: 07/31/03 10:09 Received: 07/31/03 14:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB02-0 (P308025-13) Soil Sampled: 07/31/03 10:09 Received: 07/31/03 14:10 | | | | | | | | | | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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NE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB02-0 (P308025-13) Soil Sampled: 07/31/03 10:09 Received: 07/31/03 14:10 | | | | | | | | | | |
| 2-Methylphenol | ND | 16 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 55 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 66 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 70 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 68 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 69 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 97 % | 64-119 | | | " | " | " | " | |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB02-3 (P308025-14) Soil Sampled: 07/31/03 10:23 Received: 07/31/03 14:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB02-3 (P308025-14) Soil Sampled: 07/31/03 10:23 Received: 07/31/03 14:10 | | | | | | | | | | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 61 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 71 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 74 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 80 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 90 % | 51-144 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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NE
11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|-----------|------------|--------------------|----------|----------|----------|----------|----------|-----------|----------|
| 36D-SB02-3 (P308025-14) Soil Sampled: 07/31/03 10:23 Received: 07/31/03 14:10 | | | | | | | | | | |
| Surrogate: Terphenyl-d14 | | 95 % | 64-119 | | | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 36D-SB02-6 (P308025-15) Soil Sampled: 07/31/03 10:35 Received: 07/31/03 14:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 35 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB02-6 (P308025-15) Soil Sampled: 07/31/03 10:35 Received: 07/31/03 14:10 | | | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | ug/kg | 1 | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 58 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 67 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 67 % | 16-126 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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11/14/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 36D-SB02-6 (P308025-15) Soil Sampled: 07/31/03 10:35 Received: 07/31/03 14:10 | | | | | | | | | | |
| Surrogate: 2-Fluorobiphenyl | | 70 % | 28-134 | | | 3080086 | 08/13/03 | 08/20/03 | EPA 8270C | |
| Surrogate: 2,4,6-Tribromophenol | | 81 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 94 % | 64-119 | | | " | " | " | " | |
| 36D-SB02-15E (P308025-16) Water Sampled: 07/31/03 11:04 Received: 07/31/03 14:10 | | | | | | | | | | |
| Acenaphthene | ND | 1.2 | 10 | ug/l | 1 | 3080056 | 08/05/03 | 08/13/03 | EPA 8270C | |
| Acenaphthylene | ND | 1.4 | 10 | " | " | " | " | " | " | |
| Anthracene | ND | 0.62 | 10 | " | " | " | " | " | " | |
| Azobenzene | ND | 0.65 | 21 | " | " | " | " | " | " | |
| Benzidine | ND | 3.3 | 52 | " | " | " | " | " | " | |
| Benzoic acid | ND | 4.0 | 52 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 0.45 | 10 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 1.2 | 10 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 0.66 | 10 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 0.90 | 10 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 4.0 | 21 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 1.1 | 10 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 1.5 | 10 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 1.6 | 10 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 2.9 | 10 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 0.72 | 10 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 2.8 | 10 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 0.57 | 21 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 2.4 | 21 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 1.5 | 10 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 0.32 | 10 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 1.0 | 10 | " | " | " | " | " | " | |
| Chrysene | ND | 0.46 | 10 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 0.57 | 10 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 1.1 | 10 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 1.1 | 10 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 1.9 | 10 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 1.8 | 10 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 1.8 | 10 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 2.9 | 21 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 0.48 | 10 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 0.43 | 10 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: August 1, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308047

Sample Identification

32D-SB07-5
32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a second order calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS
Semivolatiles - Data Qualification Summary - SDG P308047

No Sample Data Qualified in this SDG

Aerojet RI/FS
Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308047

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-5 (P308047-02) Soil Sampled: 08/01/03 09:50 Received: 08/01/03 14:07 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/21/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-5 (P308047-02) Soil Sampled: 08/01/03 09:50 Received: 08/01/03 14:07 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/21/03 | EPA 8270C | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 58 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 67 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 71 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 76 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 83 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 101 % | | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|-----------|------------|--------------------|-------|----------|---------|----------|----------|-----------|----------|
| 32D-SB07-10 (P308047-03) Soil Sampled: 08/01/03 10:05 Received: 08/01/03 14:07 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/21/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 54 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-10 (P308047-03) Soil Sampled: 08/01/03 10:05 Received: 08/01/03 14:07 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/21/03 | EPA 8270C | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 59 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 68 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 72 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 77 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 83 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 108 % | | 64-119 | | | " | " | " | " | |

NE
11/14/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 4, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5
32D-SB06-15

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

| Date | Compound | %D | Associated Samples | Flag | A or P |
|-----------|-----------|-------|-----------------------------|----------------------------|--------|
| 8/22/2003 | Benzidine | -26.1 | 32D-SB07-2.5 32D-SB06-15 | J detects UJ nondetects | A |

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The sample used for the matrix spike was not related to this site. Therefore, the results did affect the sample results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as a field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS**Semivolatiles - Data Qualification Summary - SDG P308071**

| SDG | Sample | Compound | Flag | A or P | Reason |
|---------|-----------------------------|-----------|----------------------------|--------|-------------------|
| P308071 | 32D-SB07-2.5 32D-SB06-15 | Benzidine | J detects UJ nondetects | A | CCV %D $> \pm 25$ |

Aerojet RI/FS**Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308071**

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308071
Reported:
09/09/03 16:50

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-2.5 (P308071-01) Soil Sampled: 08/04/03 09:05 Received: 08/04/03 14:17 manual | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/22/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benidine | ND | 1700 | 1700 | " | " | " | " | " | " | W |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 170 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308071
Reported:
09/09/03 16:50

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-2.5 (P308071-01) Soil Sampled: 08/04/03 09:05 Received: 08/04/03 14:17 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/22/03 | EPA 8270C | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 43 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 56 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 53 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 65 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 86 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 96 % | | 64-119 | | | " | " | " | " | |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Acrojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308071
Reported:
09/09/03 16:50

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB06-15 (P308071-06) Soil Sampled: 08/04/03 12:45 Received: 08/04/03 14:17 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/22/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | 46 | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308071
Reported:
09/09/03 16:50

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB06-15 (P308071-06) Soil Sampled: 08/04/03 12:45 Received: 08/04/03 14:17 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3080253 | 08/14/03 | 08/22/03 | EPA 8270C | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 50 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 57 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 61 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 65 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 75 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 106 % | | 64-119 | | | " | " | " | " | |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 5, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5
32D-SB05-7

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria with the following exceptions:

| Date | Compound | %D | Associated Samples | Flag | A or P |
|-----------|-----------|-------|----------------------------|----------------------------|--------|
| 8/22/2003 | Benzidine | -26.1 | 32D-SB05-2.5 32D-SB05-7 | J detects UJ nondetects | A |

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks with the following exceptions:

| Method Blank ID | Extraction Date | Compound | Concentration | Associated Samples |
|------------------------|------------------------|---------------------|----------------------|----------------------------|
| 3080305BLK | 8/18/2003 | Di-n-butylphthalate | 73.7 J | 32D-SB05-2.5 32D-SB05-7 |

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS**Semivolatiles - Data Qualification Summary - SDG P308126**

| SDG | Sample | Compound | Flag | A or P | Reason |
|---------|----------------------------|-----------|----------------------------|--------|-------------------|
| P308126 | 32D-SB05-2.5 32D-SB05-7 | Benzidine | J detects UJ nondetects | A | CCV %D $> \pm 25$ |

Aerojet RI/FS**Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308126**

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RL/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|---------|
| 32D-SB06-45 (P308126-03) Soil Sampled: 08/04/03 15:30 Received: 08/05/03 13:17 | | | | | | | | | | |
| Surrogate: Phenol-d6 | 73 % | | 16-130 | | | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | DU anal |
| Surrogate: Nitrobenzene-d5 | 78 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 84 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 82 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 104 % | | 64-119 | | | " | " | " | " | |
| 32D-SB05-2.5 (P308126-04) Soil Sampled: 08/05/03 10:15 Received: 08/05/03 13:17 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | W |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

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11/17/03
Pag 34



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB05-2.5 (P308126-04) Soil Sampled: 08/05/03 10:15 Received: 08/05/03 13:17 | | | | | | | | | | |
| 2,4-Dichlorophenol | ND | 15 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

BJ
9/12/03
Pag 35



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---------|--------|-----|--------------------|-------|----------|-------|----------|----------|--------|-------|
|---------|--------|-----|--------------------|-------|----------|-------|----------|----------|--------|-------|

32D-SB05-2.5 (P308126-04) Soil Sampled: 08/05/03 10:15 Received: 08/05/03 13:17

| | | | | | | | | | | |
|---------------------------------|----|-------|--------|-------|---|---------|----------|----------|-----------|---------|
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | 2J Qual |
| Surrogate: 2-Fluorophenol | | 60 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 68 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 72 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 78 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 78 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 103 % | 64-119 | | | " | " | " | " | |

32D-SB05-7 (P308126-05) Soil Sampled: 08/05/03 10:25 Received: 08/05/03 13:17

| | | | | | | | | | | |
|----------------------------------|----|------|------|-------|---|---------|----------|----------|-----------|---|
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | W |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB05-7 (P308126-05) Soil - Sampled: 08/05/03 10:25 Received: 08/05/03 13:17 | | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | 47 | 14 | 330 | " | " | " | " | " | " | J |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

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11/7/03
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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Acrojet RLFS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB05-7 (P308126-05) Soil Sampled: 08/05/03 10:25 Received: 08/05/03 13:17 | | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 69 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 78 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 82 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 89 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 85 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 110 % | 64-119 | | | " | " | " | " | |
| 32D-SB05-10 (P308126-06) Soil Sampled: 08/05/03 10:30 Received: 08/05/03 13:17 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 6, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308139

Sample Identification

38D-SB08-2.5
38D-SB08-20

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks with the following exceptions:

| Method Blank ID | Extraction Date | Compound | Concentration | Associated Samples |
|-----------------|-----------------|---------------------|---------------|-----------------------------|
| 3080305BLK | 8/18/2003 | Di-n-butylphthalate | 73.7 J | 39D-SB08-2.5 39D-SB08-20 |

Sample concentrations were compared to concentrations detected in the method blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Semivolatiles - Data Qualification Summary - SDG P308139

No Sample Data Qualified in this SDG

Aerojet RI/FS

Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308139

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308139
Reported:
09/08/03 11:24

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 38D-SB08-2.5 (P308139-01) Soil Sampled: 08/06/03 08:35 Received: 08/06/03 14:20 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

CJ
4/17/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308139
Reported:
09/08/03 11:24

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 38D-SB08-2.5 (P308139-01) Soil Sampled: 08/06/03 08:35 Received: 08/06/03 14:20 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 32 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 40 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 41 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 48 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 80 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 92 % | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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03
11/17/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308139
Reported:
09/08/03 11:24

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 38D-SB08-20 (P308139-02) Soil Sampled: 08/06/03 10:15 Received: 08/06/03 14:20 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Signature
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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308139
Reported:
09/08/03 11:24

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 38D-SB08-20 (P308139-02) Soil Sampled: 08/06/03 10:15 Received: 08/06/03 14:20 | | | | | | | | | | |
| Di-n-octyl phthalate | ND | 11 | 330 | ug/kg | 1 | 3080305 | 08/18/03 | 08/22/03 | EPA 8270C | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 63 % | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | | 72 % | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | | 75 % | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | | 81 % | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | | 89 % | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | | 110 % | 64-119 | | | " | " | " | " | |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 7, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308140

Sample Identification

33D-SB01-1
33D-SB01-5
33D-SB01-10

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The sample used for the matrix spike was not related to this site. Therefore, the results did affect the sample results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Semivolatiles - Data Qualification Summary - SDG P308140

No Sample Data Qualified in this SDG

Aerojet RI/FS

Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308140

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308140
Reported:
09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 33D-SB01-1 (P308140-01) Soil Sampled: 08/07/03 08:34 Received: 08/07/03 13:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

CS
11/17/03
Page 5 of 37

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

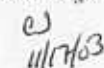
P308140
Reported:
09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 33D-SB01-1 (P308140-01) Soil Sampled: 08/07/03 08:34 Received: 08/07/03 13:10 | | | | | | | | | | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 52 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 64 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 59 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 67 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 89 % | | 51-144 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet R1/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308140
Reported:
09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 33D-SB01-1 (P308140-01) Soil Sampled: 08/07/03 08:34 Received: 08/07/03 13:10 | | | | | | | | | | |
| Surrogate: Terphenyl-d14 | | 106 % | 64-119 | | | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| 33D-SB01-5 (P308140-02) Soil Sampled: 08/07/03 08:55 Received: 08/07/03 13:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

WJH
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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308140
Reported:
09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 33D-SB01-5 (P308140-02) Soil Sampled: 08/07/03 08:55 Received: 08/07/03 13:10 | | | | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 52 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 64 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 58 % | | 16-126 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308140
Reported:
09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|-----------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 33D-SB01-5 (P308140-02) Soil Sampled: 08/07/03 08:55 Received: 08/07/03 13:10 | | | | | | | | | | |
| Surrogate: 2-Fluorobiphenyl | 59 % | | 28-134 | | | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Surrogate: 2,4,6-Tribromophenol | 68 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 107 % | | 64-119 | | | " | " | " | " | |
| 33D-SB01-10 (P308140-03) Soil Sampled: 08/07/03 09:37 Received: 08/07/03 13:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 45 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | 48 | 14 | 330 | " | " | " | " | " | " | J |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

09/03/03
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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

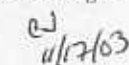
P308140
Reported:
09/03/03 12:51

Semivolatile Organic Compounds by EPA Method 8270C Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 33D-SB01-10 (P308140-03) Soil Sampled: 08/07/03 09:37 Received: 08/07/03 13:10 | | | | | | | | | | |
| 2,4-Dimethylphenol | ND | 36 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | " | " | " | " | " | " | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | | 62 % | 11-120 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308140
Reported:
09/03/03 12:51

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 33D-SB01-10 (P308140-03) Soil Sampled: 08/07/03 09:37 Received: 08/07/03 13:10 | | | | | | | | | | |
| Surrogate: Phenol-d6 | 73 % | | 16-130 | | | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Surrogate: Nitrobenzene-d5 | 65 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 65 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 83 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 106 % | | 64-119 | | | " | " | " | " | |
| 33D-SB01-15 (P308140-04) Soil Sampled: 08/07/03 09:53 Received: 08/07/03 13:10 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | ND | 9.3 | 330 | " | " | " | " | " | " | |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 8, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Semivolatiles
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308192

Sample Identification

39D-SB01-2.5
39D-SB01-5
39D-SB01-10

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8270C for Semivolatiles.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XVI.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. GC/MS Instrument Performance Check

Instrument performance was checked at 12-hour intervals.

All ion abundance requirements were met.

III. Initial Calibration

Initial calibration was performed using required standard concentrations.

Percent relative standard deviations (%RSD) were less than or equal to 15.0% for each individual compound and less than or equal to 30.0% for calibration check compounds (CCCs).

In the case where %RSD was greater than 15.0%, the laboratory used a calibration curve to evaluate the compound. All coefficients of determination (r^2) were greater than or equal to 0.990.

For the purposes of technical evaluation, all compounds were evaluated against the 30.0% (%RSD) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

Average relative response factors (RRF) for all semivolatile target compounds and system performance check compounds (SPCCs) were greater than or equal to 0.05 as required.

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

Percent differences (%D) between the initial calibration RRF and the continuing calibration RRF were within the method criteria of less than or equal to 20.0% for calibration check compounds (CCCs).

For the purposes of technical evaluation, all compounds were evaluated against the 25.0% (%D) National Functional Guideline criteria. Unless noted above, all compounds were within the validation criteria.

All of the continuing calibration RRF values were greater than or equal to 0.05.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No semivolatile contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

| Sample | Surrogate | %R (Limits) | Compound | Flag | A or P |
|-------------|------------------|-------------|----------|------|--------|
| 39D-SB010-5 | 2-Fluorobiphenyl | 23 (28-134) | None | None | None |

Since only one base neutral surrogate was outside of the QC limits, no qualifications are necessary.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The sample used for the matrix spike was not related to this site. Therefore, the results did affect the sample results.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Internal Standards

All internal standard areas and retention times were within QC limits.

XI. Target Compound Identifications

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

XIII. Tentatively Identified Compounds (TICs)

Raw data were not reviewed for this SDG.

XIV. System Performance

Raw data were not reviewed for this SDG.

XV. Overall Assessment

Data flags have been summarized at the end of the report.

XVI. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

XVII. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Semivolatiles - Data Qualification Summary - SDG P308192

No Sample Data Qualified in this SDG

Aerojet RI/FS

Semivolatiles - Laboratory Blank Data Qualification Summary - SDG P308192

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308192
Reported:
09/02/03 17:33

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|------------|------------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 39D-SB01-2.5 (P308192-01) Soil Sampled: 08/08/03 08:34 Received: 08/08/03 14:30 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 100 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308192
Reported:
09/02/03 17:33

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 39D-SB01-2.5 (P308192-01) Soil Sampled: 08/08/03 08:34 Received: 08/08/03 14:30 | | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 43 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 62 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 47 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 65 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 81 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 105 % | | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308192
Reported:
09/02/03 17:33

Semivolatile Organic Compounds by EPA Method 8270C

Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|-----------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 39D-SB01-5 (P308192-02) Soil Sampled: 08/08/03 08:44 Received: 08/08/03 14:30 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 68 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308192
Reported:
09/02/03 17:33

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 39D-SB01-5 (P308192-02) Soil Sampled: 08/08/03 08:44 Received: 08/08/03 14:30 | | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 37 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 57 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 28 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 23 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 71 % | | 51-144 | | | " | " | " | " | S-LIM |
| Surrogate: Terphenyl-d14 | 106 % | | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

09/11/03
Page 8 of 42



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RL/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308192
Reported:
09/02/03 17:33

**Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 39D-SB01-10 (P308192-03) Soil Sampled: 08/08/03 08:54 Received: 08/08/03 14:30 | | | | | | | | | | |
| Acenaphthene | ND | 8.7 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Acenaphthylene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Anthracene | ND | 14 | 330 | " | " | " | " | " | " | |
| Azobenzene | ND | 20 | 330 | " | " | " | " | " | " | |
| Benzidine | ND | 1700 | 1700 | " | " | " | " | " | " | |
| Benzoic acid | ND | 2.7 | 1700 | " | " | " | " | " | " | |
| Benzo (a) anthracene | ND | 7.6 | 330 | " | " | " | " | " | " | |
| Benzo (b+k) fluoranthene (total) | ND | 13 | 330 | " | " | " | " | " | " | |
| Benzo (g,h,i) perylene | ND | 8.8 | 330 | " | " | " | " | " | " | |
| Benzo (a) pyrene | ND | 10 | 330 | " | " | " | " | " | " | |
| Benzyl alcohol | ND | 11 | 660 | " | " | " | " | " | " | |
| Bis(2-chloroethoxy)methane | ND | 9.1 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroethyl)ether | ND | 15 | 330 | " | " | " | " | " | " | |
| Bis(2-chloroisopropyl)ether | ND | 16 | 330 | " | " | " | " | " | " | |
| Bis(2-ethylhexyl)phthalate | 84 | 9.3 | 330 | " | " | " | " | " | " | J |
| 4-Bromophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Butyl benzyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4-Chloroaniline | ND | 58 | 660 | " | " | " | " | " | " | |
| 4-Chloro-3-methylphenol | ND | 11 | 660 | " | " | " | " | " | " | |
| 2-Chloronaphthalene | ND | 9.9 | 330 | " | " | " | " | " | " | |
| 2-Chlorophenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Chlorophenyl phenyl ether | ND | 13 | 330 | " | " | " | " | " | " | |
| Chrysene | ND | 11 | 330 | " | " | " | " | " | " | |
| Dibenz (a,h) anthracene | ND | 18 | 330 | " | " | " | " | " | " | |
| Dibenzofuran | ND | 9.6 | 330 | " | " | " | " | " | " | |
| Di-n-butyl phthalate | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2-Dichlorobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 1,3-Dichlorobenzene | ND | 14 | 330 | " | " | " | " | " | " | |
| 1,4-Dichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 3,3'-Dichlorobenzidine | ND | 44 | 660 | " | " | " | " | " | " | |
| 2,4-Dichlorophenol | ND | 15 | 330 | " | " | " | " | " | " | |
| Diethyl phthalate | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4-Dimethylphenol | ND | 36 | 330 | " | " | " | " | " | " | |
| Dimethyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| 4,6-Dinitro-2-methylphenol | ND | 17 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrophenol | ND | 10 | 1700 | " | " | " | " | " | " | |
| 2,4-Dinitrotoluene | ND | 20 | 330 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

CS
4/17/03
Page 9 of 42



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308192
Reported:
09/02/03 17:33

Semivolatile Organic Compounds by EPA Method 8270C
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| 39D-SB01-10 (P308192-03) Soil Sampled: 08/08/03 08:54 Received: 08/08/03 14:30 | | | | | | | | | | |
| 2,6-Dinitrotoluene | ND | 13 | 330 | ug/kg | 1 | 3080396 | 08/21/03 | 08/28/03 | EPA 8270C | |
| Di-n-octyl phthalate | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluoranthene | ND | 11 | 330 | " | " | " | " | " | " | |
| Fluorene | ND | 7.9 | 330 | " | " | " | " | " | " | |
| Hexachlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| Hexachlorobutadiene | ND | 17 | 330 | " | " | " | " | " | " | |
| Hexachlorocyclopentadiene | ND | 10 | 330 | " | " | " | " | " | " | |
| Hexachloroethane | ND | 17 | 330 | " | " | " | " | " | " | |
| Indeno (1,2,3-cd) pyrene | ND | 11 | 330 | " | " | " | " | " | " | |
| Isophorone | ND | 14 | 330 | " | " | " | " | " | " | |
| 2-Methylnaphthalene | ND | 10 | 330 | " | " | " | " | " | " | |
| 2-Methylphenol | ND | 16 | 330 | " | " | " | " | " | " | |
| 4-Methylphenol | ND | 11 | 330 | " | " | " | " | " | " | |
| Naphthalene | ND | 13 | 330 | " | " | " | " | " | " | |
| 2-Nitroaniline | ND | 17 | 1700 | " | " | " | " | " | " | |
| 3-Nitroaniline | ND | 18 | 1700 | " | " | " | " | " | " | |
| 4-Nitroaniline | ND | 22 | 1700 | " | " | " | " | " | " | |
| Nitrobenzene | ND | 16 | 330 | " | " | " | " | " | " | |
| 2-Nitrophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 4-Nitrophenol | ND | 23 | 1700 | " | " | " | " | " | " | |
| N-Nitrosodimethylamine | ND | 16 | 330 | " | " | " | " | " | " | |
| N-Nitrosodiphenylamine | ND | 17 | 330 | " | " | " | " | " | " | |
| N-Nitrosodi-n-propylamine | ND | 15 | 330 | " | " | " | " | " | " | |
| Pentachlorophenol | ND | 12 | 1700 | " | " | " | " | " | " | |
| Phenanthrene | ND | 14 | 330 | " | " | " | " | " | " | |
| Phenol | ND | 12 | 330 | " | " | " | " | " | " | |
| Pyrene | ND | 12 | 330 | " | " | " | " | " | " | |
| 1,2,4-Trichlorobenzene | ND | 15 | 330 | " | " | " | " | " | " | |
| 2,4,5-Trichlorophenol | ND | 14 | 330 | " | " | " | " | " | " | |
| 2,4,6-Trichlorophenol | ND | 9.4 | 330 | " | " | " | " | " | " | |
| Surrogate: 2-Fluorophenol | 50 % | | 11-120 | | | " | " | " | " | |
| Surrogate: Phenol-d6 | 69 % | | 16-130 | | | " | " | " | " | |
| Surrogate: Nitrobenzene-d5 | 42 % | | 16-126 | | | " | " | " | " | |
| Surrogate: 2-Fluorobiphenyl | 42 % | | 28-134 | | | " | " | " | " | |
| Surrogate: 2,4,6-Tribromophenol | 83 % | | 51-144 | | | " | " | " | " | |
| Surrogate: Terphenyl-d14 | 111 % | | 64-119 | | | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

ERM/Aerojet
Data Validation Reports
LDC# 0310-02A3 through 0310-02D3

Polychlorinated Biphenyls

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 14, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Polychlorinated Biphenyls
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307257

Sample Identification

11D-SNS10
11D-SNS11
11D-SNS24

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies (COCs) were reviewed for documentation of cooler temperatures. All cooler temperature criteria were met.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits.

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable.

A laboratory control sample was analyzed in duplicate in lieu of MS/MSD.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

XIV. Field Duplicates

There were no samples identified as field duplicates in this SDG. Therefore, this parameter was not evaluated.

XV. Field Blanks

There were no samples identified as field blanks in this SDG. Therefore, this parameter was not evaluated.

Aerojet RI/FS

Polychlorinated Biphenyls - Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

Aerojet RI/FS

Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG P307257

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Polychlorinated Biphenyls by EPA Method 8082
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|------|--------------------|-------|----------|---------|----------|----------|----------|-------------------|
| 11D-SNS10 (P307257-13) Soil Sampled: 07/14/03 12:55 Received: 07/15/03 11:08 | | | | | | | | | | |
| | | | | | | | | | | C-01, C-06 |
| PCB-1016 | ND | | 33 | ug/kg | 1 | 3070322 | 07/17/03 | 07/17/03 | EPA 8082 | |
| PCB-1221 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1232 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1242 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1248 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1254 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1260 | 150 | | 33 | " | " | " | " | " | " | |
| <i>Surrogate: Decachlorobiphenyl</i> | | 55 % | 46-115 | | | " | " | 07/17/03 | " | |
| 11D-SNS11 (P307257-14) Soil Sampled: 07/14/03 13:00 Received: 07/15/03 11:08 | | | | | | | | | | |
| | | | | | | | | | | C-01, C-06 |
| PCB-1016 | ND | | 33 | ug/kg | 1 | 3070322 | 07/17/03 | 07/17/03 | EPA 8082 | |
| PCB-1221 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1232 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1242 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1248 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1254 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1260 | 90 | | 33 | " | " | " | " | " | " | |
| <i>Surrogate: Decachlorobiphenyl</i> | | 59 % | 46-115 | | | " | " | 07/17/03 | " | |
| 10D-SNS24 (P307257-15) Soil Sampled: 07/14/03 13:15 Received: 07/15/03 11:08 | | | | | | | | | | |
| | | | | | | | | | | C-01, C-06 |
| PCB-1016 | ND | | 33 | ug/kg | 1 | 3070322 | 07/17/03 | 07/17/03 | EPA 8082 | |
| PCB-1221 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1232 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1242 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1248 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1254 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1260 | 290 | | 33 | " | " | " | " | " | " | |
| <i>Surrogate: Decachlorobiphenyl</i> | | 52 % | 46-115 | | | " | " | " | " | |

ME
11/17/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 24, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Polychlorinated Biphenyls
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307487

Sample Identification

10D-SNS 34
10D-SNS 31
10D-SNS 26

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8082 for Polychlorinated Biphenyls.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section V.

Field duplicates are summarized in Section XIV.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- | | |
|------|--|
| U | Indicates the compound or analyte was analyzed for but not detected at or above the stated limit. |
| J | Indicates an estimated value. |
| R | Quality control indicates the data is not usable. |
| N | Presumptive evidence of presence of the constituent. |
| UJ | Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value. |
| A | Indicates the finding is based upon technical validation criteria. |
| P | Indicates the finding is related to a protocol/contractual deviation. |
| None | Indicates the data was not significantly impacted by the finding, therefore qualification was not required. |

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies (COCs) were reviewed for documentation of cooler temperatures. All cooler temperature criteria were met.

II. GC/ECD Instrument Performance Check

Instrument performance was acceptable unless noted otherwise under initial calibration and continuing calibration sections.

III. Initial Calibration

Initial calibration of multicomponent compounds was performed for the primary (quantitation) column as required by the method.

The percent relative standard deviations (%RSD) were less than or equal to 20.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) of calibration factors in continuing standard mixtures were within the 15.0% QC limits with the following exceptions:

| Date | Standard | Column | Compound | %D | Associated Samples | Flag | A or P |
|--------|----------|--------|--|----------|--------------------|-----------------------------|--------|
| 8/1/03 | ECDF0003 | ECD | PCB-1221, PCB-1232, PCB-1248, PCB-1254, PCB-1242 | 100 (15) | 10D-SNS 34 | J detects, UJ nondetects | A |

V. Blanks

Method blanks were reviewed for each matrix as applicable. No polychlorinated biphenyl contaminants were found in the method blanks.

VI. Surrogate Spikes

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits

with the following exceptions:

| Spike ID (Associated Samples) | Compound | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|-------------------------------------|----------|---------------------|----------------------|-----------------|------|--------|
| P307481-01 (None) | PCB-1260 | 129 (85 – 115) | 152 (85 – 115) | 16 (35) | None | P |

As the MS/MSD analysis was performed on a non-site parent sample, no sample data were qualified in this SDG based on this nonconformance.

VIII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits with the following exceptions:

| LCS ID | Compound | %R (Limits) | Associated Samples | Flag | A or P |
|-------------|----------------------|--------------------------------|--|-----------------------------|--------|
| 3070628-BS1 | PCB-1016 PCB-1260 | 71 (85 – 115) 77 (85 – 115) | 10D-SNS 34, 10D-SNS 31, 10D-SNS 26 | J detects, UJ nondetects | A |

IX. Regional Quality Assurance and Quality Control

Not applicable.

X. Pesticide Cleanup Checks

a. Florisil Cartridge Check

Florisil cleanup was not required and therefore not performed in this SDG.

b. GPC Calibration

GPC cleanup was not required and therefore not performed in this SDG.

XI. Target Compound Identification

Raw data were not reviewed for this SDG.

XII. Compound Quantitation and Reported CRQLs

Raw data were not reviewed for this SDG.

XIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

XIV. Field Duplicates

There were no samples identified as field duplicates in this SDG. Therefore, this parameter was not evaluated.

XV. Field Blanks

There were no samples identified as field blanks in this SDG. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Polychlorinated Biphenyls - Data Qualification Summary - SDG P307487**

| SDG | Sample | Compound | Flag | A or P | Reason |
|---------|--|----------------------|-----------------------------|--------|-------------------------------------|
| P307487 | 10D-SNS 34, 10D-SNS 31, 10D-SNS 26 | PCB-1016 PCB-1260 | J detects, UJ nondetects | A | LCS % recoveries below QC limits |

Aerojet RI/FS**Polychlorinated Biphenyls - Laboratory Blank Data Qualification Summary - SDG P307487**

No Sample Data Qualified in this SDG



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Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Acrojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307487
Reported:
08/13/03 16:30

Polychlorinated Biphenyls by EPA Method 8082
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|------|-----------------|-------|----------|---------|----------|----------|----------|-------|
| 10D-SNS 34 (P307487-04) Soil Sampled: 07/24/03 11:55 Received: 07/24/03 16:30 C-01, C-06 | | | | | | | | | | |
| PCB-1016 | ND | | 33 | ug/kg | 1 | 3070628 | 07/30/03 | 08/01/03 | EPA 8082 | |
| PCB-1221 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1232 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1242 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1248 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1254 | 500 | | 33 | " | " | " | " | " | " | |
| PCB-1260 | 520 | | 33 | " | " | " | " | " | " | |
| Surrogate: Decachlorobiphenyl | | 61 % | 46-115 | | | " | " | " | " | |
| 10D-SNS 31 (P307487-05) Soil Sampled: 07/24/03 12:00 Received: 07/24/03 16:30 C-01, C-06 | | | | | | | | | | |
| PCB-1016 | ND | | 33 | ug/kg | 1 | 3070628 | 07/30/03 | 07/31/03 | EPA 8082 | |
| PCB-1221 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1232 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1242 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1248 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1254 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1260 | 1200 | | 33 | " | " | " | " | " | " | |
| Surrogate: Decachlorobiphenyl | | 71 % | 46-115 | | | " | " | " | " | |
| 10D-SNS 26 (P307487-06) Soil Sampled: 07/24/03 12:10 Received: 07/24/03 16:30 C-01, C-06 | | | | | | | | | | |
| PCB-1016 | ND | | 33 | ug/kg | 1 | 3070628 | 07/30/03 | 07/31/03 | EPA 8082 | |
| PCB-1221 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1232 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1242 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1248 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1254 | ND | | 33 | " | " | " | " | " | " | |
| PCB-1260 | 490 | | 33 | " | " | " | " | " | " | |
| Surrogate: Decachlorobiphenyl | | 66 % | 46-115 | | | " | " | " | " | |

14/17/03

ERM/Aerojet
Data Validation Reports
LDC# 0310-02A4 through 0310-02S4

Metals

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 14 and 15, 2003
LDC Report Date: November 12, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307257

Sample Identification

| | |
|------------|-----------|
| C32-SNS01 | 10D-SNS24 |
| C32-SNS02 | 10D-SNS25 |
| D(e)-SNS03 | 10D-SNS26 |
| D(e)-SNS02 | 10D-SNS27 |
| D(e)-SNS04 | 10D-SNS28 |
| D(e)-SNS05 | 5D-SNS09 |
| 11D-SNS09 | 5D-SNS07 |
| 11D-SNS08 | |
| 11D-SNS06 | |
| 11D-SNS05 | |

Introduction

This data review covers seventeen soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|----------|---------------------|----------------------|-----------------|--------|--------|
| C32-SNS01MS/MSD (C32-SNS02, D(e)-SNS03, D(e)-SNS02, D(e)-SNS04, D(e)-SNS05, 11D-SNS09, 11D-SNS08, 11D-SNS06, | Antimony | 51 (80-120) | 52 (80-120) | 3 (20) | J / UJ | A |
| | Barium | 26 (80-120) | 97 (80-120) | 16 (20) | J / UJ | |
| | Zinc | 79 (80-120) | 130 (80-120) | 10 (20) | J / UJ | |
| | Antimony | 51 (80-120) | 52 (80-120) | 3 (20) | J / UJ | A |

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|----------------|----------------------------|-----------------------------|--------------------|------------------|--------|
| 11D-SNS05, 10D-SNS24, 10D-SNS25, 10D-SNS26, 10D-SNS27, 10D-SNS28, 5D-SNS09, 5D-SNS07) | Barium Zinc | 26 (80-120) 79 (80-120) | 97 (80-120) 130 (80-120) | 16 (20) 10 (20) | J / UJ J / UJ | |

Matrix spike recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, and titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample C32-SNS01, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Lead - Data Qualification Summary - SDG P307257**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|--|-----------------------------|-----------------------------|---------------|--|
| P307257 | C32-SNS01 C32-SNS02, D(e)-SNS03, D(e)-SNS02, D(e)-SNS04, D(e)-SNS05, 11D-SNS09, 11D-SNS08, 11D-SNS06, 11D-SNS05, 10D-SNS24, 10D-SNS25, 10D-SNS26, 10D-SNS27, 10D-SNS28, 5D-SNS09, 5D-SNS07 | Antimony Barium, Zinc | J detects, UJ nondetects | A | Matrix spike/matrix spike duplicate % recoveries below control limits |

Aerojet RI/FS**Lead - Laboratory Blank Data Qualification Summary - SDG P307257**

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

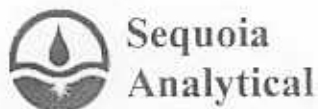
P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| C32-SNS01 (P307257-01) Soil Sampled: 07/14/03 09:05 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.61 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 12000 | | 44 | " | " | " | " | " | " | |
| Arsenic | 4.7 | 0.12 | 0.88 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 8.8 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 160 | | 0.88 | " | " | " | " | " | " | J |
| Beryllium | 0.39 | | 0.088 | " | " | " | " | " | " | |
| Calcium | 6500 | | 88 | " | " | " | " | " | " | |
| Cadmium | 0.45 | 0.23 | 0.88 | " | " | " | " | " | " | J |
| Cobalt | 13 | | 0.61 | " | " | " | " | " | " | |
| Chromium | 37 | | 0.88 | " | " | " | " | " | " | |
| Copper | 32 | | 1.8 | " | " | " | " | " | " | |
| Iron | 21000 | | 44 | " | " | " | " | " | " | |
| Mercury | 0.51 | | 0.017 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1700 | | 220 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 3700 | | 44 | " | " | " | " | " | " | |
| Manganese | 570 | | 0.88 | " | " | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.8 | " | " | " | " | 07/28/03 | " | |
| Sodium | 160 | | 44 | " | " | " | " | " | " | |
| Nickel | 32 | | 2.6 | " | " | " | " | " | " | |
| Lead | 59 | | 0.26 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.44 | " | " | " | " | " | " | uJ |
| Selenium | 0.45 | 0.063 | 0.88 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 520 | | 1.8 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | ND | | 0.18 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 51 | | 0.88 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 150 | | 1.8 | " | " | " | " | " | " | J |

DV
Qual

NE
11/17/03



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Environmental Resources Management
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Sacramento CA, 95833

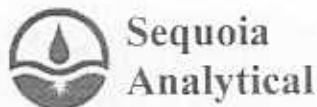
Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C32-SNS02 (P307257-02) Soil Sampled: 07/14/03 09:20 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.60 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 13000 | | 43 | " | " | " | " | " | " | |
| Arsenic | 4.2 | 0.12 | 0.86 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 8.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 150 | | 0.86 | " | " | " | " | " | " | J |
| Beryllium | 0.40 | | 0.086 | " | " | " | " | " | " | |
| Calcium | 5000 | | 86 | " | " | " | " | " | " | |
| Cadmium | 0.69 | 0.22 | 0.86 | " | " | " | " | " | " | J |
| Cobalt | 13 | | 0.60 | " | " | " | " | " | " | |
| Chromium | 64 | | 0.86 | " | " | " | " | " | " | |
| Copper | 38 | | 1.7 | " | " | " | " | " | " | |
| Iron | 21000 | | 43 | " | " | " | " | " | " | |
| Mercury | 0.41 | | 0.018 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1900 | | 220 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 3800 | | 43 | " | " | " | " | " | " | |
| Manganese | 450 | | 0.86 | " | " | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.7 | " | " | " | " | 07/28/03 | " | |
| Sodium | 170 | | 43 | " | " | " | " | " | " | |
| Nickel | 30 | | 2.6 | " | " | " | " | " | " | |
| Lead | 66 | | 0.26 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.43 | " | " | " | " | " | " | WJ |
| Selenium | 0.27 | 0.062 | 0.86 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 560 | | 1.7 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | ND | | 0.17 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 52 | | 0.86 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 280 | | 1.7 | " | " | " | " | " | " | J |

AE
11/17/03



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| D(e)-SNS03 (P307257-03) Soil Sampled: 07/14/03 09:40 Received: 07/15/03 11:08 | | | | | | | | | | |
| Lead | 10 | | 0.23 | mg/kg | 1 | 3070439 | 07/22/03 | 07/30/03 | EPA 6020 | |
| D(e)-SNS02 (P307257-04) Soil Sampled: 07/14/03 09:50 Received: 07/15/03 11:08 | | | | | | | | | | |
| Lead | 13 | | 0.25 | mg/kg | 1 | 3070439 | 07/22/03 | 07/30/03 | EPA 6020 | |
| D(e)-SNS04 (P307257-05) Soil Sampled: 07/14/03 09:55 Received: 07/15/03 11:08 | | | | | | | | | | |
| Lead | 18 | | 0.28 | mg/kg | 1 | 3070439 | 07/22/03 | 07/30/03 | EPA 6020 | |
| D(e)-SNS05 (P307257-06) Soil Sampled: 07/14/03 10:05 Received: 07/15/03 11:08 | | | | | | | | | | |
| Lead | 12 | | 0.28 | mg/kg | 1 | 3070439 | 07/22/03 | 07/30/03 | EPA 6020 | |
| 11D-SNS09 (P307257-07) Soil Sampled: 07/14/03 10:45 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.62 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 16000 | | 45 | " | " | " | " | " | " | |
| Arsenic | 4.2 | 0.13 | 0.89 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 8.9 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 100 | | 0.89 | " | " | " | " | " | " | J |
| Beryllium | 0.48 | | 0.089 | " | " | " | " | " | " | |
| Calcium | 2400 | | 89 | " | " | " | " | " | " | |
| Cadmium | 2.0 | 0.23 | 0.89 | " | " | " | " | " | " | |
| Cobalt | 12 | | 0.62 | " | " | " | " | " | " | |
| Chromium | 49 | | 0.89 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | UJ |
| Copper | 41 | | 1.8 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 25000 | | 45 | " | " | " | " | " | " | |
| Mercury | 0.12 | | 0.018 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 2100 | | 220 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 4400 | | 45 | " | " | " | " | " | " | |
| Manganese | 430 | | 4.5 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 2.5 | | 1.8 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 190 | | 45 | " | " | " | " | " | " | |
| Nickel | 34 | | 2.7 | " | " | " | " | " | " | |
| Lead | 110 | | 0.27 | " | " | " | " | 07/30/03 | EPA 6020 | J |
| Antimony | 0.98 | | 0.45 | " | " | " | " | " | " | |
| Selenium | 0.68 | 0.064 | 0.89 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 800 | | 1.8 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.20 | | 0.18 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 65 | | 0.89 | " | " | " | " | 07/28/03 | EPA 6010B | J |
| Zinc | 1900 | | 1.8 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

NE
11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 11D-SNS08 (P307257-09) Soil Sampled: 07/14/03 10:50 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.60 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 7100 | | 43 | " | " | " | " | " | " | |
| Arsenic | 1.8 | 0.12 | 0.86 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 8.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 57 | | 0.86 | " | " | " | " | " | " | J |
| Beryllium | 0.22 | | 0.086 | " | " | " | " | " | " | |
| Calcium | 1900 | | 86 | " | " | " | " | " | " | |
| Cadmium | 0.89 | 0.22 | 0.86 | " | " | " | " | " | " | |
| Cobalt | 5.3 | | 0.60 | " | " | " | " | " | " | |
| Chromium | 33 | | 0.86 | " | " | " | " | " | " | |
| Hexavalent Chromium | 0.34 | | 0.20 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | |
| Copper | 25 | | 1.7 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | J |
| Iron | 14000 | | 43 | " | " | " | " | " | " | |
| Mercury | 0.027 | | 0.018 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 980 | | 220 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 2600 | | 43 | " | " | " | " | " | " | |
| Manganese | 170 | | 4.3 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.7 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 180 | | 43 | " | " | " | " | " | " | |
| Nickel | 21 | | 2.6 | " | " | " | " | " | " | |
| Lead | 79 | | 0.26 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | 1.0 | | 0.43 | " | " | " | " | " | " | J |
| Selenium | 0.38 | 0.062 | 0.86 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 470 | | 1.7 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | ND | | 0.17 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 34 | | 0.86 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 1500 | | 1.7 | " | " | " | " | " | " | J |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| IID-SNS06 (P307257-11) Soil Sampled: 07/14/03 12:15 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.50 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 15000 | | 36 | " | " | " | " | " | " | |
| Arsenic | 2.5 | 0.10 | 0.71 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 7.1 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 79 | | 0.71 | " | " | " | " | " | " | J |
| Beryllium | 0.36 | | 0.071 | " | " | " | " | " | " | |
| Calcium | 2100 | | 71 | " | " | " | " | " | " | |
| Cadmium | 0.22 | 0.19 | 0.71 | " | " | " | " | " | " | J |
| Cobalt | 9.7 | | 0.50 | " | " | " | " | " | " | |
| Chromium | 43 | | 0.71 | " | " | " | " | " | " | |
| Hexavalent Chromium | 0.23 | | 0.21 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | J |
| Copper | 27 | | 1.4 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 18000 | | 36 | " | " | " | " | " | " | |
| Mercury | ND | | 0.015 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1200 | | 180 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 3800 | | 36 | " | " | " | " | " | " | |
| Manganese | 280 | | 3.6 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.4 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 150 | | 36 | " | " | " | " | " | " | |
| Nickel | 39 | | 2.1 | " | " | " | " | " | " | |
| Lead | 8.8 | | 0.21 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.36 | " | " | " | " | " | " | UJ |
| Selenium | 0.22 | 0.051 | 0.71 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 680 | | 1.4 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | ND | | 0.14 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 46 | | 0.71 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 210 | | 1.4 | " | " | " | " | " | " | J |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 11D-SNS05 (P307257-12) Soil Sampled: 07/14/03 12:30 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.50 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 16000 | | 36 | " | " | " | " | " | " | |
| Arsenic | 2.9 | 0.10 | 0.71 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 7.1 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 100 | | 0.71 | " | " | " | " | " | " | J |
| Beryllium | 0.46 | | 0.071 | " | " | " | " | " | " | |
| Calcium | 1900 | | 71 | " | " | " | " | " | " | |
| Cadmium | ND | 0.19 | 0.71 | " | " | " | " | " | " | |
| Cobalt | 13 | | 0.50 | " | " | " | " | " | " | |
| Chromium | 53 | | 0.71 | " | " | " | " | " | " | |
| Hexavalent Chromium | 0.60 | | 0.21 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | J |
| Copper | 29 | | 1.4 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 24000 | | 36 | " | " | " | " | " | " | |
| Mercury | 0.051 | | 0.016 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1700 | | 180 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 3800 | | 36 | " | " | " | " | " | " | |
| Manganese | 500 | | 3.6 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.4 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 130 | | 36 | " | " | " | " | " | " | |
| Nickel | 42 | | 2.1 | " | " | " | " | " | " | |
| Lead | 7.9 | | 0.21 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.36 | " | " | " | " | " | " | WJ |
| Selenium | 0.37 | 0.051 | 0.71 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 750 | | 1.4 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.14 | | 0.14 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 62 | | 0.71 | " | " | " | " | 07/28/03 | EPA 6010B | J |
| Zinc | 68 | | 1.4 | " | " | " | " | " | " | |

NE
11/17/03

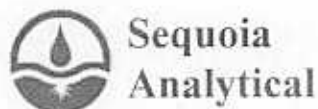
Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|---------|
| 10D-SNS24 (P307257-15) Soil Sampled: 07/14/03 13:15 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.56 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 8600 | | 40 | " | " | " | " | " | " | |
| Arsenic | 3.2 | 0.11 | 0.81 | " | " | " | " | 08/01/03 | EPA 6020 | |
| Boron | ND | | 8.1 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 63 | | 0.81 | " | " | " | " | " | " | J |
| Beryllium | 0.27 | | 0.081 | " | " | " | " | " | " | |
| Calcium | 2800 | | 81 | " | " | " | " | " | " | |
| Cadmium | 1.7 | 0.21 | 0.81 | " | " | " | " | " | " | |
| Cobalt | 6.6 | | 0.56 | " | " | " | " | " | " | |
| Chromium | 33 | | 0.81 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 2.1 | " | 10 | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | R-01 WJ |
| Copper | 48 | | 1.6 | " | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 23000 | | 40 | " | " | " | " | " | " | |
| Mercury | 0.042 | | 0.018 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1000 | | 200 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 2900 | | 40 | " | " | " | " | " | " | |
| Manganese | 220 | | 4.0 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 1.8 | | 1.6 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 200 | | 40 | " | " | " | " | " | " | |
| Nickel | 24 | | 2.4 | " | " | " | " | " | " | |
| Lead | 40 | | 0.40 | " | " | " | " | 07/31/03 | EPA 6020 | |
| Antimony | 0.55 | | 0.40 | " | " | " | " | 07/30/03 | " | J |
| Selenium | 0.46 | 0.058 | 0.81 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 450 | | 1.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | ND | | 0.16 | " | " | " | " | 07/31/03 | EPA 6020 | |
| Vanadium | 41 | | 0.81 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 1500 | | 1.6 | " | " | " | " | " | " | J |



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SNS25 (P307257-16) Soil Sampled: 07/14/03 13:20 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.53 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 22000 | | 38 | " | " | " | " | " | " | |
| Arsenic | 7.9 | 0.11 | 0.76 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 7.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 180 | | 0.76 | " | " | " | " | " | " | J |
| Beryllium | 0.59 | | 0.076 | " | " | " | " | " | " | |
| Calcium | 3600 | | 76 | " | " | " | " | " | " | |
| Cadmium | 1.7 | 0.20 | 0.76 | " | " | " | " | " | " | |
| Cobalt | 19 | | 0.53 | " | " | " | " | " | " | |
| Chromium | 66 | | 0.76 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.20 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | WJ |
| Copper | 58 | | 1.5 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 34000 | | 38 | " | " | " | " | " | " | |
| Mercury | 0.076 | | 0.017 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1700 | | 190 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6000 | | 38 | " | " | " | " | " | " | |
| Manganese | 850 | | 3.8 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 2.0 | | 1.5 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 240 | | 38 | " | " | " | " | " | " | |
| Nickel | 51 | | 2.3 | " | " | " | " | " | " | |
| Lead | 33 | | 0.23 | " | " | " | " | 07/30/03 | EPA 6020 | J |
| Antimony | 0.44 | | 0.38 | " | " | " | " | " | " | J |
| Selenium | 0.22 | 0.055 | 0.76 | " | " | " | " | 07/31/03 | " | |
| Titanium | 770 | | 1.5 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.17 | | 0.15 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 87 | | 0.76 | " | " | " | " | 07/28/03 | EPA 6010B | J |
| Zinc | 1000 | | 1.5 | " | " | " | " | " | " | |

11/17/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SNS26 (P307257-17) Soil Sampled: 07/14/03 13:30 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.56 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 17000 | | 40 | " | " | " | " | " | " | |
| Arsenic | 8.7 | 0.11 | 0.81 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 8.1 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 120 | | 0.81 | " | " | " | " | " | " | J |
| Beryllium | 0.47 | | 0.081 | " | " | " | " | " | " | |
| Calcium | 3500 | | 81 | " | " | " | " | " | " | |
| Cadmium | 1.4 | 0.21 | 0.81 | " | " | " | " | " | " | |
| Cobalt | 14 | | 0.56 | " | " | " | " | " | " | |
| Chromium | 56 | | 0.81 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | UJ |
| Copper | 45 | | 1.6 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 27000 | | 40 | " | " | " | " | " | " | |
| Mercury | 0.067 | | 0.019 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 2000 | | 200 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 5300 | | 40 | " | " | " | " | " | " | |
| Manganese | 490 | | 4.0 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.6 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 340 | | 40 | " | " | " | " | " | " | |
| Nickel | 36 | | 2.4 | " | " | " | " | " | " | |
| Lead | 34 | | 0.24 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | 0.49 | | 0.40 | " | " | " | " | " | " | J |
| Selenium | 0.41 | 0.058 | 0.81 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 740 | | 1.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.19 | | 0.16 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 71 | | 0.81 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 980 | | 1.6 | " | " | " | " | " | " | J |

DV
Qual

J

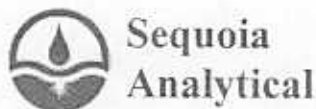
UJ

J

J

J

NE
11/17/03



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Environmental Resources Management
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Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SNS27 (P307257-18) Soil Sampled: 07/14/03 13:40 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.67 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 25000 | | 48 | " | " | " | " | " | " | |
| Arsenic | 7.0 | 0.14 | 0.96 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 9.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 250 | | 0.96 | " | " | " | " | " | " | J |
| Beryllium | 0.82 | | 0.096 | " | " | " | " | " | " | |
| Calcium | 4100 | | 96 | " | " | " | " | " | " | |
| Cadmium | 1.7 | 0.25 | 0.96 | " | " | " | " | " | " | |
| Cobalt | 27 | | 0.67 | " | " | " | " | " | " | |
| Chromium | 87 | | 0.96 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | WJ |
| Copper | 66 | | 1.9 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 42000 | | 48 | " | " | " | " | " | " | |
| Mercury | 0.18 | | 0.016 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 2300 | | 240 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6800 | | 48 | " | " | " | " | " | " | |
| Manganese | 1000 | | 4.8 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 2.6 | | 1.9 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 220 | | 48 | " | " | " | " | " | " | |
| Nickel | 65 | | 2.9 | " | " | " | " | " | " | |
| Lead | 51 | | 0.29 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.48 | " | " | " | " | " | " | WJ |
| Selenium | 0.45 | 0.069 | 0.96 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 960 | | 1.9 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.20 | | 0.19 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 110 | | 0.96 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 1100 | | 1.9 | " | " | " | " | " | " | J |

NE
11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SNS28 (P307257-19) Soil Sampled: 07/14/03 13:50 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | 17 | | 0.45 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 23000 | | 32 | " | " | " | " | " | " | |
| Arsenic | 6.6 | 0.091 | 0.64 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 6.4 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 180 | | 0.64 | " | " | " | " | " | " | J |
| Beryllium | 0.70 | | 0.064 | " | " | " | " | " | " | |
| Calcium | 3700 | | 64 | " | " | " | " | " | " | |
| Cadmium | 2.2 | 0.17 | 0.64 | " | " | " | " | " | " | |
| Cobalt | 20 | | 0.45 | " | " | " | " | " | " | |
| Chromium | 83 | | 0.64 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.20 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | WJ |
| Copper | 60 | | 1.3 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 37000 | | 32 | " | " | " | " | " | " | |
| Mercury | 0.57 | | 0.018 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1900 | | 160 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6000 | | 32 | " | " | " | " | " | " | |
| Manganese | 760 | | 3.2 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 2.5 | | 1.3 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 200 | | 32 | " | " | " | " | " | " | |
| Nickel | 57 | | 1.9 | " | " | " | " | " | " | |
| Lead | 39 | | 0.19 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.32 | " | " | " | " | " | " | WJ |
| Selenium | 0.36 | 0.046 | 0.64 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 740 | | 1.3 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.14 | | 0.13 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 97 | | 0.64 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 770 | | 1.3 | " | " | " | " | " | " | J |



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 5D-SNS09 (P307257-20) Soil Sampled: 07/15/03 09:00 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | ND | | 0.47 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 24000 | | 33 | " | " | " | " | " | " | |
| Arsenic | 9.3 | 0.095 | 0.67 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 6.7 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 240 | | 0.67 | " | " | " | " | " | " | J |
| Beryllium | 0.93 | | 0.067 | " | " | " | " | " | " | |
| Calcium | 6000 | | 67 | " | " | " | " | " | " | |
| Cadmium | 0.49 | 0.17 | 0.67 | " | " | " | " | " | " | J |
| Cobalt | 18 | | 0.47 | " | " | " | " | " | " | |
| Chromium | 51 | | 0.67 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.20 | " | " | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | UJ |
| Copper | 48 | | 1.3 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 35000 | | 33 | " | " | " | " | " | " | |
| Mercury | 0.083 | | 0.017 | " | " | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1900 | | 170 | " | " | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6500 | | 33 | " | " | " | " | " | " | |
| Manganese | 1000 | | 3.3 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 1.7 | | 1.3 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 640 | | 33 | " | " | " | " | " | " | |
| Nickel | 46 | | 2.0 | " | " | " | " | " | " | |
| Lead | 65 | | 0.20 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | 0.40 | | 0.33 | " | " | " | " | " | " | J |
| Selenium | 0.087 | 0.048 | 0.67 | " | " | " | " | 08/01/03 | " | J |
| Titanium | 800 | | 1.3 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.16 | | 0.13 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 89 | | 0.67 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 150 | | 1.3 | " | " | " | " | " | " | J |

NE
11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
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Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P307257
Reported:
08/19/03 12:17

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|---------|
| 5D-SNS07 (P307257-22) Soil Sampled: 07/15/03 09:35 Received: 07/15/03 11:08 | | | | | | | | | | |
| Silver | 40 | | 0.67 | mg/kg | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 24000 | | 48 | " | " | " | " | " | " | |
| Arsenic | 12 | 0.14 | 0.96 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Boron | ND | | 9.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 180 | | 0.96 | " | " | " | " | " | " | J |
| Beryllium | 0.74 | | 0.096 | " | " | " | " | " | " | |
| Calcium | 4200 | | 96 | " | " | " | " | " | " | |
| Cadmium | 2.2 | 0.25 | 0.96 | " | " | " | " | " | " | |
| Cobalt | 20 | | 0.67 | " | " | " | " | " | " | |
| Chromium | 130 | | 0.96 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 1.0 | " | 5 | 3070485 | 07/23/03 | 07/24/03 | EPA 7196A | R-01 UJ |
| Copper | 110 | | 1.9 | " | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Iron | 38000 | | 48 | " | " | " | " | " | " | |
| Mercury | 0.75 | | 0.17 | " | 10 | 3070336 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 2400 | | 240 | " | 1 | 3070439 | 07/22/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6200 | | 48 | " | " | " | " | " | " | |
| Manganese | 730 | | 4.8 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 3.7 | | 1.9 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 260 | | 48 | " | " | " | " | " | " | |
| Nickel | 62 | | 2.9 | " | " | " | " | " | " | |
| Lead | 92 | | 0.29 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.48 | " | " | " | " | " | " | UJ |
| Selenium | 0.52 | 0.069 | 0.96 | " | " | " | " | 07/31/03 | " | J |
| Titanium | 810 | | 1.9 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | 0.19 | | 0.19 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 98 | | 0.96 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 540 | | 1.9 | " | " | " | " | " | " | J |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 15, 2003
LDC Report Date: November 12, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307335

Sample Identification

C15-SS07
C15-SS06
C15-SS05
C15-SS08
A20-BML01
A20-BML03

Introduction

This data review covers six soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, 7470A and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|----------|---------------------|----------------------|-----------------|-----------|--------|
| C15-SS07MS/MSD (C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03) | Antimony | 37 (80-120) | 35 (80-120) | 2 (20) | J / UJ | A |
| | Arsenic | 81 (80-120) | 78 (80-120) | 0.2 (20) | J / UJ | |
| | Barium | 143 (80-120) | 148 (80-120) | 2 (20) | J detects | |
| | Chromium | 125 (80-120) | 121 (80-120) | 0 (20) | J detects | |
| | Mercury | 72 (80-120) | 81 (80-120) | 1 (20) | J / UJ | |
| | Nickel | 125 (80-120) | 125 (80-120) | 2 (20) | J detects | |
| | Selenium | 75 (80-120) | 73 (80-120) | 0.9 (20) | J / UJ | |

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|----------------|-----------------------------|-----------------------------|------------------|---------------------|--------|
| C15-SS07MS/MSD (C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03) | Silver Zinc | 67 (80-120) 110 (80-120) | 67 (80-120) 131 (80-120) | 3 (20) 9 (20) | J / UJ J detects | A |

Matrix spike recoveries for aluminum, calcium, iron, magnesium, manganese, potassium, and titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample C15-SS07, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

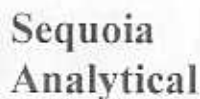
No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Lead - Data Qualification Summary - SDG P307335**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|---|--|-----------------------------|---------------|--|
| P307335 | C15-SS07, C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03 | Antimony, Arsenic, Mercury, Selenium, Silver | J detects, UJ nondetects | A | Matrix spike/matrix spike duplicate % recoveries below control limits |
| P307335 | C15-SS07, C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03 | Barium, Chromium, Nickel, Zinc | J detects | A | Matrix spike/matrix spike duplicate % recoveries above control limits |

Aerojet RI/FS**Lead - Laboratory Blank Data Qualification Summary - SDG P307335**

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C15-SS07 (P307335-01) Soil Sampled: 07/15/03 11:20 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.60 | mg/kg | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 29000 | | 43 | " | " | " | " | " | " | |
| Arsenic | 7.5 | 0.12 | 0.86 | " | " | " | " | 08/01/03 | EPA 6020 | |
| Boron | ND | | 8.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 250 | | 0.86 | " | " | " | " | " | " | |
| Beryllium | 0.92 | | 0.086 | " | " | " | " | " | " | |
| Calcium | 3300 | | 86 | " | " | " | " | " | " | |
| Cadmium | 0.32 | 0.22 | 0.86 | " | " | " | " | " | " | |
| Cobalt | 24 | | 0.60 | " | " | " | " | " | " | |
| Chromium | 81 | | 0.86 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3070631 | 07/30/03 | 07/31/03 | EPA 7196A | |
| Copper | 58 | | 1.7 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 41000 | | 43 | " | " | " | " | 07/29/03 | " | |
| Mercury | 0.079 | | 0.019 | " | " | 3070398 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 2800 | | 220 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6800 | | 43 | " | " | " | " | " | " | |
| Manganese | 1000 | | 0.86 | " | " | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.7 | " | " | " | " | 07/28/03 | " | |
| Sodium | 180 | | 43 | " | " | " | " | " | " | |
| Nickel | 60 | | 2.6 | " | " | " | " | " | " | |
| Lead | 20 | | 0.43 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | 0.43 | | 0.43 | " | " | " | " | " | " | |
| Selenium | 0.30 | 0.062 | 0.86 | " | " | " | " | 08/01/03 | " | |
| Titanium | 970 | | 1.7 | " | " | " | " | 07/29/03 | EPA 6010B | |
| Thallium | 0.20 | | 0.17 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 110 | | 0.86 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 82 | | 1.7 | " | " | " | " | " | " | |

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

NE
11/17/07



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| C15-SS06 (P307335-02) Soil Sampled: 07/15/03 11:45 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.60 | mg/kg | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | DN |
| Aluminum | 26000 | | 43 | " | " | " | " | " | " | Qual |
| Arsenic | 6.0 | 0.12 | 0.86 | " | " | " | " | 08/01/03 | EPA 6020 | JS |
| Boron | ND | | 8.6 | " | " | " | " | 07/28/03 | EPA 6010B | J |
| Barium | 270 | | 0.86 | " | " | " | " | " | " | J |
| Beryllium | 0.89 | | 0.086 | " | " | " | " | " | " | |
| Calcium | 2800 | | 86 | " | " | " | " | " | " | |
| Cadmium | 0.67 | 0.22 | 0.86 | " | " | " | " | " | " | J |
| Cobalt | 13 | | 0.60 | " | " | " | " | " | " | |
| Chromium | 880 | | 0.86 | " | " | " | " | " | " | J |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3070631 | 07/30/03 | 07/31/03 | EPA 7196A | JS |
| Copper | 240 | | 1.7 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 40000 | | 220 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.062 | | 0.020 | " | 1 | 3070398 | 07/28/03 | 07/29/03 | EPA 7471A | J |
| Potassium | 3200 | | 220 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6100 | | 43 | " | " | " | " | " | " | |
| Manganese | 450 | | 4.3 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 2.4 | | 1.7 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 190 | | 43 | " | " | " | " | " | " | |
| Nickel | 53 | | 2.6 | " | " | " | " | " | " | J |
| Lead | 39 | | 0.43 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | 0.66 | | 0.43 | " | " | " | " | " | " | J |
| Selenium | 0.49 | 0.062 | 0.86 | " | " | " | " | 08/01/03 | " | J |
| Titanium | 960 | | 8.6 | " | 5 | " | " | 07/29/03 | EPA 6010B | |
| Thallium | 0.18 | | 0.17 | " | 1 | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 100 | | 0.86 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 270 | | 1.7 | " | " | " | " | " | " | J |

LE
11/17/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| C15-SS05 (P307335-03) Soil Sampled: 07/15/03 12:00 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.65 | mg/kg | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 25000 | | 46 | " | " | " | " | " | " | |
| Arsenic | 5.9 | 0.13 | 0.93 | " | " | " | " | 08/01/03 | EPA 6020 | |
| Boron | ND | | 9.3 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 250 | | 0.93 | " | " | " | " | " | " | |
| Beryllium | 0.76 | | 0.093 | " | " | " | " | " | " | |
| Calcium | 3900 | | 93 | " | " | " | " | " | " | |
| Cadmium | 1.1 | 0.24 | 0.93 | " | " | " | " | " | " | |
| Cobalt | 18 | | 0.65 | " | " | " | " | " | " | |
| Chromium | 100 | | 0.93 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 1.0 | " | 5 | 3070631 | 07/30/03 | 07/31/03 | EPA 7196A | R-01 |
| Copper | 62 | | 1.9 | " | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 38000 | | 230 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.077 | | 0.018 | " | 1 | 3070398 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 3400 | | 230 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6100 | | 46 | " | " | " | " | " | " | |
| Manganese | 770 | | 4.6 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.9 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 220 | | 46 | " | " | " | " | " | " | |
| Nickel | 51 | | 2.8 | " | " | " | " | " | " | |
| Lead | 41 | | 0.46 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | ND | | 0.46 | " | " | " | " | " | " | |
| Selenium | 0.072 | 0.067 | 0.93 | " | " | " | " | 08/01/03 | " | |
| Titanium | 980 | | 9.3 | " | 5 | " | " | 07/29/03 | EPA 6010B | |
| Thallium | ND | | 0.19 | " | 1 | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 88 | | 0.93 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 240 | | 1.9 | " | " | " | " | " | " | |

DV
Qual.

WJ

J

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J

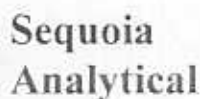
J

WJ

J

J

11/17/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

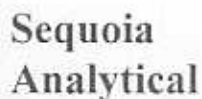
Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| C15-SS08 (P307335-04) Soil Sampled: 07/15/03 13:20 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.56 | mg/kg | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 32000 | | 40 | " | " | " | " | " | " | |
| Arsenic | 6.5 | 0.11 | 0.79 | " | " | " | " | 08/01/03 | EPA 6020 | |
| Boron | ND | | 7.9 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 230 | | 0.79 | " | " | " | " | " | " | |
| Beryllium | 0.99 | | 0.079 | " | " | " | " | " | " | |
| Calcium | 3500 | | 79 | " | " | " | " | " | " | |
| Cadmium | 0.72 | 0.21 | 0.79 | " | " | " | " | " | " | |
| Cobalt | 24 | | 0.56 | " | " | " | " | " | " | |
| Chromium | 78 | | 0.79 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3070631 | 07/30/03 | 07/31/03 | EPA 7196A | |
| Copper | 57 | | 1.6 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 46000 | | 200 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.088 | | 0.015 | " | 1 | 3070398 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 3600 | | 200 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6700 | | 40 | " | " | " | " | " | " | |
| Manganese | 990 | | 4.0 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | 1.6 | | 1.6 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 180 | | 40 | " | " | " | " | " | " | |
| Nickel | 57 | | 2.4 | " | " | " | " | " | " | |
| Lead | 26 | | 0.40 | " | " | " | " | 07/30/03 | EPA 6020 | |
| Antimony | 0.46 | | 0.40 | " | " | " | " | " | " | |
| Selenium | 0.14 | 0.057 | 0.79 | " | " | " | " | 08/01/03 | " | |
| Titanium | 950 | | 7.9 | " | 5 | " | " | 07/29/03 | EPA 6010B | |
| Thallium | ND | | 0.16 | " | 1 | " | " | 07/30/03 | EPA 6020 | |
| Vanadium | 110 | | 0.79 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 97 | | 1.6 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

WE 11/17/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

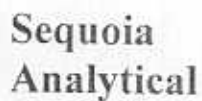
P307335
Reported:
08/19/03 12:04

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| A20-BML01 (P307335-10) Soil Sampled: 07/16/03 10:20 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.56 | mg/kg | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 18000 | | 40 | " | " | " | " | " | " | |
| Arsenic | 5.3 | 0.11 | 0.81 | " | " | " | " | 08/01/03 | EPA 6020 | |
| Boron | ND | | 8.1 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 150 | | 0.81 | " | " | " | " | " | " | |
| Beryllium | 0.46 | | 0.081 | " | " | " | " | " | " | |
| Calcium | 3100 | | 81 | " | " | " | " | " | " | |
| Cadmium | ND | 0.21 | 0.81 | " | " | " | " | " | " | |
| Cobalt | 13 | | 0.56 | " | " | " | " | " | " | |
| Chromium | 46 | | 0.81 | " | " | " | " | " | " | |
| Hexavalent Chromium | 0.27 | | 0.21 | " | " | 3070631 | 07/30/03 | 07/31/03 | EPA 7196A | |
| Copper | 38 | | 1.6 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 29000 | | 200 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.097 | | 0.016 | " | 1 | 3070398 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1500 | | 200 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 4700 | | 40 | " | " | " | " | " | " | |
| Manganese | 550 | | 4.0 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.6 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 280 | | 40 | " | " | " | " | " | " | |
| Nickel | 42 | | 2.4 | " | " | " | " | " | " | |
| Lead | 5.9 | | 0.40 | " | " | " | " | 07/31/03 | EPA 6020 | |
| Antimony | ND | | 0.40 | " | " | " | " | " | " | |
| Selenium | ND | 0.058 | 0.81 | " | " | " | " | 08/01/03 | " | |
| Titanium | 840 | | 8.1 | " | 5 | " | " | 07/29/03 | EPA 6010B | |
| Thallium | ND | | 0.16 | " | 1 | " | " | 07/31/03 | EPA 6020 | |
| Vanadium | 73 | | 0.81 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 51 | | 1.6 | " | " | " | " | " | " | |

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

ME
11/17/03



1455 McDowell Blvd, North Ste D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| A20-BML03 (P307335-13) Soil Sampled: 07/16/03 12:00 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.61 | mg/kg | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Aluminum | 17000 | | 44 | " | " | " | " | " | " | |
| Arsenic | 3.1 | 0.12 | 0.88 | " | " | " | " | 08/01/03 | EPA 6020 | |
| Boron | ND | | 8.8 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 130 | | 0.88 | " | " | " | " | " | " | |
| Beryllium | 0.51 | | 0.088 | " | " | " | " | " | " | |
| Calcium | 3000 | | 88 | " | " | " | " | " | " | |
| Cadmium | 0.25 | 0.23 | 0.88 | " | " | " | " | " | " | |
| Cobalt | 13 | | 0.61 | " | " | " | " | " | " | |
| Chromium | 46 | | 0.88 | " | " | " | " | " | " | |
| Hexavalent Chromium | 0.68 | | 0.52 | " | 2.5 | 3070631 | 07/30/03 | 07/31/03 | EPA 7196A | |
| Copper | 29 | | 1.8 | " | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 27000 | | 220 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.045 | | 0.018 | " | 1 | 3070398 | 07/28/03 | 07/29/03 | EPA 7471A | |
| Potassium | 1800 | | 220 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 4100 | | 44 | " | " | " | " | " | " | |
| Manganese | 520 | | 4.4 | " | 5 | " | " | 07/29/03 | " | |
| Molybdenum | ND | | 1.8 | " | 1 | " | " | 07/28/03 | " | |
| Sodium | 170 | | 44 | " | " | " | " | " | " | |
| Nickel | 37 | | 2.6 | " | " | " | " | " | " | |
| Lead | 6.3 | | 0.44 | " | " | " | " | 07/31/03 | EPA 6020 | |
| Antimony | ND | | 0.44 | " | " | " | " | " | " | |
| Selenium | ND | 0.063 | 0.88 | " | " | " | " | 08/01/03 | " | |
| Titanium | 880 | | 8.8 | " | 5 | " | " | 07/29/03 | EPA 6010B | |
| Thallium | ND | | 0.18 | " | 1 | " | " | 07/31/03 | EPA 6020 | |
| Vanadium | 65 | | 0.88 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 44 | | 1.8 | " | " | " | " | " | " | |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

12
11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

STLC CAM Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| A20-BML01 (P307335-10) Soil Sampled: 07/16/03 10:20 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.035 | mg/l | 1 | 3070448 | 07/30/03 | 07/30/03 | EPA 6010B | |
| Aluminum | 37 | | 1.0 | " | " | " | " | 07/30/03 | " | |
| Arsenic | ND | | 0.50 | " | " | " | " | 07/30/03 | " | |
| Boron | ND | | 0.50 | " | " | " | " | 07/30/03 | " | |
| Barium | 11 | | 0.050 | " | " | " | " | " | " | |
| Beryllium | 0.0074 | | 0.0050 | " | " | " | " | " | " | |
| Calcium | 200 | | 5.0 | " | " | " | " | " | " | |
| Cadmium | ND | | 0.050 | " | " | " | " | " | " | |
| Cobalt | 0.70 | | 0.035 | " | " | " | " | " | " | |
| Chromium | 0.083 | | 0.050 | " | " | " | " | " | " | |
| Copper | 0.59 | | 0.050 | " | " | " | " | " | " | |
| Iron | 78 | | 1.5 | " | " | " | " | " | " | |
| Mercury | ND | | 0.0020 | " | " | 3070429 | 07/30/03 | 07/30/03 | EPA 7470A | |
| Potassium | ND | | 12 | " | " | 3070448 | 07/30/03 | 07/30/03 | EPA 6010B | |
| Magnesium | 81 | | 2.5 | " | " | " | " | " | " | |
| Manganese | 33 | | 0.050 | " | " | " | " | " | " | |
| Molybdenum | ND | | 0.10 | " | " | " | " | 07/30/03 | " | |
| Nickel | 0.42 | | 0.15 | " | " | " | " | 07/30/03 | " | |
| Lead | ND | | 0.38 | " | " | " | " | 07/30/03 | " | |
| Antimony | ND | | 0.30 | " | " | " | " | " | " | |
| Selenium | ND | | 0.50 | " | " | " | " | " | " | |
| Titanium | 1.0 | | 0.050 | " | " | " | " | 07/30/03 | " | |
| Thallium | ND | | 0.50 | " | " | " | " | 07/30/03 | " | |
| Vanadium | 0.90 | | 0.050 | " | " | " | " | 07/30/03 | " | |
| Zinc | 0.28 | | 0.10 | " | " | " | " | " | " | |

11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

STLC CAM Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| A20-BML03 (P307335-13) Soil Sampled: 07/16/03 12:00 Received: 07/16/03 14:25 | | | | | | | | | | |
| Silver | ND | | 0.035 | mg/l | 1 | 3070448 | 07/30/03 | 07/30/03 | EPA 6010B | |
| Aluminum | 24 | | 1.0 | " | " | " | " | " | " | |
| Arsenic | ND | | 0.50 | " | " | " | " | " | " | |
| Boron | ND | | 0.50 | " | " | " | " | " | " | |
| Barium | 8.0 | | 0.050 | " | " | " | " | " | " | |
| Beryllium | ND | | 0.0050 | " | " | " | " | " | " | |
| Calcium | 130 | | 5.0 | " | " | " | " | " | " | |
| Cadmium | ND | | 0.050 | " | " | " | " | " | " | |
| Cobalt | 0.53 | | 0.035 | " | " | " | " | " | " | |
| Chromium | 0.063 | | 0.050 | " | " | " | " | " | " | |
| Copper | 0.19 | | 0.050 | " | " | " | " | " | " | |
| Iron | 56 | | 1.5 | " | " | " | " | " | " | |
| Mercury | ND | | 0.0020 | " | " | 3070429 | 07/30/03 | 07/30/03 | EPA 7470A | |
| Potassium | ND | | 12 | " | " | 3070448 | 07/30/03 | 07/30/03 | EPA 6010B | |
| Magnesium | 35 | | 2.5 | " | " | " | " | " | " | |
| Manganese | 35 | | 0.050 | " | " | " | " | " | " | |
| Molybdenum | ND | | 0.10 | " | " | " | " | " | " | |
| Nickel | 0.31 | | 0.15 | " | " | " | " | " | " | |
| Lead | ND | | 0.38 | " | " | " | " | " | " | |
| Antimony | ND | | 0.30 | " | " | " | " | " | " | |
| Selenium | ND | | 0.50 | " | " | " | " | " | " | |
| Titanium | 0.99 | | 0.050 | " | " | " | " | " | " | |
| Thallium | ND | | 0.50 | " | " | " | " | " | " | |
| Vanadium | 0.33 | | 0.050 | " | " | " | " | " | " | |
| Zinc | 0.37 | | 0.10 | " | " | " | " | " | " | |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 30, 2003
LDC Report Date: November 12, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308025

Sample Identification

36D-SB02-0
36D-SB02-3
36D-SB02-6

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

A duplicate sample analysis was performed on sample 36D-SB02-0 with a relative percent difference (RPD) of 42, which is outside the QC limit of 20 RPD. As the MS and MSD analysis were within QC limits, no qualification of the data was made based on this anomaly.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample 36D-SB02-0, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS

Lead - Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308025

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308025
Reported:
08/25/03 15:56

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|----------|-------|
| 36D-SB02-0 (P308025-13) Soil Sampled: 07/31/03 10:09 Received: 07/31/03 14:10 | | | | | | | | | | |
| Thallium | 0.14 | | 0.095 | mg/kg | 1 | 3080063 | 08/08/03 | 08/08/03 | EPA 6020 | |
| 36D-SB02-3 (P308025-14) Soil Sampled: 07/31/03 10:23 Received: 07/31/03 14:10 | | | | | | | | | | |
| Thallium | ND | | 0.097 | mg/kg | 1 | 3080063 | 08/08/03 | 08/08/03 | EPA 6020 | |
| 36D-SB02-6 (P308025-15) Soil Sampled: 07/31/03 10:35 Received: 07/31/03 14:10 | | | | | | | | | | |
| Thallium | ND | | 0.098 | mg/kg | 1 | 3080063 | 08/08/03 | 08/08/03 | EPA 6020 | |
| 36D-SB02-15E (P308025-16) Water Sampled: 07/31/03 11:04 Received: 07/31/03 14:10 | | | | | | | | | | |
| Thallium | ND | | 2.0 | ug/l | 1 | 3080141 | 08/08/03 | 08/08/03 | EPA 6020 | |

KE
11/14/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 31, 2003
LDC Report Date: November 12, 2003
Matrix: Soil
Parameters: Lead
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308035

Sample Identification

A49-LBP03-0
A49-LBP03-0.5
A49-LBP03-1
A49-LBP10-0
A49-LBP10-0.5
A49-LBP10-1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|---|---------|---------------------|----------------------|-----------------|-----------------------------|--------|
| P308035-01 (A49-LBP03-0, A49-LBP03-0.5, A49-LBP03-1, A49-LBP10-0, A49-LBP10-0.5, A49-LBP10-1.0) | Lead | 76 (80-120) | 75 (80-120) | 3 (20) | J detects, UJ nondetects | A |

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample A49-LBP01-0, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Lead - Data Qualification Summary - SDG P308035**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|--|----------------|-----------------------------|---------------|--|
| P308035 | A49-LBP03-0 A49-LBP03-0.5 A49-LBP03-1 A49-LBP10-0 A49-LBP10-0.5 A49-LBP10-1 | Lead | J detects, UJ nondetects | A | Matrix spike/matrix spike duplicate % recoveries below control limits |

Aerojet RI/FS**Lead - Laboratory Blank Data Qualification Summary - SDG P308035**

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308035
Reported:
08/15/03 12:12

Total Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|--------------------|-------|----------|---------|----------|----------|----------|-------|
| A49-LBP01-0 (P308035-01) Soil Sampled: 07/31/03 09:40 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 12 | 0.22 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP01-0.5 (P308035-02) Soil Sampled: 07/31/03 09:50 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 7.6 | 0.23 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP01-1 (P308035-03) Soil Sampled: 07/31/03 09:55 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 4.4 | 0.24 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP02-0 (P308035-04) Soil Sampled: 07/31/03 10:04 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 7.5 | 0.25 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP02-0.5 (P308035-05) Soil Sampled: 07/31/03 10:15 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 8.1 | 0.24 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP02-1 (P308035-06) Soil Sampled: 07/31/03 10:24 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 5.2 | 0.25 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP03-0 (P308035-07) Soil Sampled: 07/31/03 10:55 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 11 | 0.25 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | J |
| A49-LBP03-0.5 (P308035-08) Soil Sampled: 07/31/03 11:04 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 6.5 | 0.25 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | J |
| A49-LBP03-1 (P308035-09) Soil Sampled: 07/31/03 11:09 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 6.1 | 0.25 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | J |



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308035
Reported:
08/15/03 12:12

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|--------------------|-------|----------|---------|----------|----------|----------|-------|
| A49-LBP09-0 (P308035-10) Soil Sampled: 07/31/03 11:20 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 13 | 0.21 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP09-0.5 (P308035-11) Soil Sampled: 07/31/03 11:25 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 12 | 0.25 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP09-1 (P308035-12) Soil Sampled: 07/31/03 11:30 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 10 | 0.21 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | |
| A49-LBP10-0 (P308035-13) Soil Sampled: 07/31/03 11:45 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 31 | 0.24 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | J |
| A49-LBP10-0.5 (P308035-14) Soil Sampled: 07/31/03 11:50 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 31 | 0.22 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | J |
| A49-LBP10-1 (P308035-15) Soil Sampled: 07/31/03 11:55 Received: 07/31/03 13:01 | | | | | | | | | |
| Lead | 32 | 0.23 | mg/kg | 1 | 3080062 | 08/05/03 | 08/12/03 | EPA 6020 | J |

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: August 1, 2003
LDC Report Date: November 12, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308047

Sample Identification

32D-SB07-5
32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|----------|---------------------|----------------------|-----------------|-----------------------------|--------|
| 32D-SB07-5MS/MSD (32D-SB07-5, 32D-SB07-10) | Antimony | 38 (80-120) | 39 (80-120) | 12 (20) | J detects, UJ nondetects | A |
| | Calcium | 91 (80-120) | 78 (80-120) | 15 (20) | | |
| | Copper | 51 (80-120) | 85 (80-120) | 13 (20) | | |
| | Zinc | 205 (80-120) | 137 (80-120) | 11 (20) | J detects | |

Matrix spike recoveries for aluminum, barium, iron, magnesium, manganese, potassium, and

titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample 32D-SB07-5, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Lead - Data Qualification Summary - SDG P308047**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|---------------------------|---------------------------------|-----------------------------|---------------|--|
| P308047 | 32D-SB07-5 32D-SB07-10 | Antimony, Calcium, Copper | J detects, UJ nondetects | A | Matrix spike/matrix spike duplicate % recoveries below control limits |
| P308047 | 32D-SB07-5 32D-SB07-10 | Zinc | J detects | A | Matrix spike/matrix spike duplicate % recoveries above control limits |

Aerojet RI/FS**Lead - Laboratory Blank Data Qualification Summary - SDG P308047**

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-5 (P308047-02) Soil Sampled: 08/01/03 09:50 Received: 08/01/03 14:07 | | | | | | | | | | |
| Silver | ND | | 0.34 | mg/kg | 1 | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Aluminum | 15000 | | 24 | " | " | " | " | " | " | |
| Arsenic | 4.3 | | 0.48 | " | 5 | " | " | 08/26/03 | EPA 6020 | |
| Boron | ND | | 4.8 | " | 1 | " | " | 08/11/03 | EPA 6010B | |
| Barium | 100 | | 0.48 | " | " | " | " | " | " | |
| Beryllium | 0.36 | | 0.048 | " | " | " | " | " | " | |
| Calcium | 2400 | | 48 | " | " | " | " | " | " | J |
| Cadmium | ND | | 0.48 | " | " | " | " | " | " | |
| Cobalt | 9.4 | | 0.34 | " | " | " | " | " | " | |
| Chromium | 41 | | 0.48 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3080258 | 08/14/03 | 08/15/03 | EPA 7196A | uJ |
| Copper | 57 | | 0.96 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | J |
| Iron | 21000 | | 24 | " | " | " | " | " | " | |
| Mercury | 0.13 | | 0.017 | " | " | 3080172 | 08/13/03 | 08/14/03 | EPA 7471A | |
| Potassium | 1500 | | 120 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Magnesium | 4900 | | 24 | " | " | " | " | " | " | |
| Manganese | 330 | | 0.48 | " | " | " | " | " | " | |
| Molybdenum | 2.4 | | 0.96 | " | " | " | " | " | " | |
| Sodium | 220 | | 24 | " | " | " | " | " | " | |
| Nickel | 33 | | 1.4 | " | " | " | " | " | " | |
| Lead | 4.4 | | 0.24 | " | " | " | " | 08/21/03 | EPA 6020 | uJ |
| Antimony | ND | | 0.24 | " | " | " | " | " | " | |
| Selenium | ND | | 0.48 | " | " | " | " | 08/22/03 | " | |
| Titanium | 660 | | 0.96 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Thallium | 0.098 | | 0.096 | " | " | " | " | 08/21/03 | EPA 6020 | |
| Vanadium | 46 | | 0.48 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Zinc | 63 | | 0.96 | " | " | " | " | " | " | J |

DV
Qual.

11/14/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-10 (P308047-03) Soil Sampled: 08/01/03 10:05 Received: 08/01/03 14:07 | | | | | | | | | | |
| Silver | ND | | 0.32 | mg/kg | 1 | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Aluminum | 8300 | | 23 | " | " | " | " | " | " | |
| Arsenic | 11 | | 0.45 | " | 5 | " | " | 08/26/03 | EPA 6020 | |
| Boron | ND | | 4.5 | " | 1 | " | " | 08/11/03 | EPA 6010B | |
| Barium | 54 | | 0.45 | " | " | " | " | " | " | |
| Beryllium | 0.20 | | 0.045 | " | " | " | " | " | " | |
| Calcium | 2000 | | 45 | " | " | " | " | " | " | J |
| Cadmium | ND | | 0.45 | " | " | " | " | " | " | |
| Cobalt | 4.6 | | 0.32 | " | " | " | " | " | " | |
| Chromium | 18 | | 0.45 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3080258 | 08/14/03 | 08/15/03 | EPA 7196A | UJ |
| Copper | 32 | | 0.90 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | J |
| Iron | 14000 | | 23 | " | " | " | " | " | " | |
| Mercury | ND | | 0.019 | " | " | 3080172 | 08/13/03 | 08/14/03 | EPA 7471A | |
| Potassium | 1100 | | 110 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Magnesium | 3200 | | 23 | " | " | " | " | " | " | |
| Manganese | 160 | | 0.45 | " | " | " | " | " | " | |
| Molybdenum | ND | | 0.90 | " | " | " | " | " | " | |
| Sodium | 220 | | 23 | " | " | " | " | " | " | |
| Nickel | 16 | | 1.4 | " | " | " | " | " | " | |
| Lead | 2.2 | | 0.23 | " | " | " | " | 08/21/03 | EPA 6020 | |
| Antimony | ND | | 0.23 | " | " | " | " | " | " | UJ |
| Selenium | ND | | 0.45 | " | " | " | " | 08/22/03 | " | |
| Titanium | 360 | | 0.90 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Thallium | ND | | 0.090 | " | " | " | " | 08/21/03 | EPA 6020 | |
| Vanadium | 30 | | 0.45 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Zinc | 40 | | 0.90 | " | " | " | " | " | " | J |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 31, 2003
LDC Report Date: November 12, 2003
Matrix: Soil
Parameters: Lead
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308051 (Revised 10/7/03)

Sample Identification

A49-LBP04-0
A49-LBP04-0.5
A49-LBP04-1

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|---------|---------------------|----------------------|-----------------|-----------------------------|--------|
| A49-LBP04-0 (A49-LBP04-0, A49-LBP04-0.5, A49-LBP04-1) | Lead | 47 (80-120) | 52 (80-120) | 2 (20) | J detects, UJ nondetects | A |

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample A49-LBP04-0, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Lead - Data Qualification Summary - SDG P308051**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|---|----------------|-----------------------------|---------------|--|
| P308051 | A49-LBP04-0 A49-LBP04-0.5 A49-LBP04-1 | Lead | J detects, UJ nondetects | A | Matrix spike/matrix spike duplicate % recoveries below control limits |

Aerojet RI/FS**Lead - Laboratory Blank Data Qualification Summary - SDG P308051**

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308051
Reported:
10/07/03 16:57

Total Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|--------------------|-------|----------|---------|----------|----------|----------|-------|
| A49-LBP04-0 (P308051-01) Soil Sampled: 07/31/03 12:50 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 36 | 0.23 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |
| A49-LBP04-0.5 (P308051-02) Soil Sampled: 07/31/03 12:55 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 24 | 0.24 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |
| A49-LBP04-1 (P308051-03) Soil Sampled: 07/31/03 13:07 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 18 | 0.25 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |
| A49-LBP05-0 (P308051-04) Soil Sampled: 07/31/03 13:22 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 20 | 0.20 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |
| A49-LBP05-0.5 (P308051-05) Soil Sampled: 07/31/03 13:25 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 18 | 0.22 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |
| A49-LBP05-1 (P308051-06) Soil Sampled: 07/31/03 13:33 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 16 | 0.24 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |
| A49-LBP06-0 (P308051-07) Soil Sampled: 07/31/03 13:43 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 17 | 0.24 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |
| A49-LBP06-0.5 (P308051-08RE1) Soil Sampled: 07/31/03 13:47 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 20 | 0.25 | mg/kg | 5 | 3090613 | 09/26/03 | 09/29/03 | EPA 6020 | |
| A49-LBP06-1 (P308051-09) Soil Sampled: 07/31/03 13:55 Received: 08/01/03 14:07 | | | | | | | | | |
| Lead | 14 | 0.24 | mg/kg | 1 | 3080074 | 08/05/03 | 08/13/03 | EPA 6020 | |

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11/14/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 4, 2003
LDC Report Date: October 22, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5
32D-SB06-15

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B, 6020, and 7471A. The metals analyzed included Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|-----------|---------------------|----------------------|-----------------|-----------|--------|
| 32D-SB07-2.5 (32D-SB07-2.5, 32D-SB06-15) | Aluminum | 243 (80-120) | NR (80-120) | 5 (20) | None | None |
| | Antimony | 40 (80-120) | 37 (80-120) | 7 (20) | J/UJ | A |
| | Barium | 111 (80-120) | 140 (80-120) | 6 (20) | None | None |
| | Boron | 79 (80-120) | 78 (80-120) | 2 (20) | J/UJ | A |
| | Calcium | 136 (80-120) | 192 (80-120) | 5 (20) | None | None |
| | Cobalt | 30 (80-120) | 23 (80-120) | 1 (20) | J/R | A |
| | Chromium | 79 (80-120) | 78 (80-120) | 3 (20) | J/UJ | A |
| | Iron | NR (80-120) | 520 (80-120) | 7 (20) | None | None |
| | Magnesium | NR (80-120) | NR (80-120) | 3 (20) | None | None |
| | Nickel | 21 (80-120) | 15 (80-120) | 2 (20) | J/R | A |
| | Potassium | 140 (80-120) | 164 (80-120) | 4 (20) | None | None |
| | Silver | 75 (80-120) | 74 (80-120) | 0.5 (20) | J/UJ | A |
| | Sodium | 109 (80-120) | 124 (80-120) | 9 (20) | J detects | A |
| | Titanium | 432 (80-120) | 368 (80-120) | 2 (20) | None | None |
| | Zinc | 102 (80-120) | 65 (80-120) | 10 (20) | J/UJ | A |
| | Mercury | 115 (80-120) | 133 (80-120) | 3 (20) | J detects | A |

The sample concentrations of aluminum, barium, calcium, iron, magnesium, potassium, and titanium were greater than four times that of the spike concentrations. Therefore, no qualifications are necessary.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS
Metals - Data Qualification Summary - SDG P308071

| SDG | Sample | Analyte | Flag | A or P | Reason |
|---------|-----------------------------|---|----------------------------|--------|--|
| P308071 | 32D-SB07-2.5 32D-SB06-15 | Cobalt Nickel | J detects R nondetects | A | Matrix spike % Recovery below 30% |
| P308071 | 32D-SB07-2.5 32D-SB06-15 | Mercury | J detects | A | Matrix spike % Recovery above control limits |
| P308071 | 32D-SB07-2.5 32D-SB06-15 | Antimony Boron Chromium Silver Zinc | J detects UJ nondetects | A | Matrix spike % Recovery below control limits |

Aerojet RI/FS
Metals - Laboratory Blank Data Qualification Summary - SDG P308071

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308071
Reported:
09/09/03 16:50

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-2.5 (P308071-01) Soil Sampled: 08/04/03 09:05 Received: 08/04/03 14:17 PJ and | | | | | | | | | | |
| Silver | ND | | 0.33 | mg/kg | 1 | 3080213 | 08/18/03 | 08/18/03 | EPA 6010B | W |
| Aluminum | 13000 | | 24 | " | " | " | " | " | " | |
| Arsenic | 3.5 | | 0.47 | " | 5 | " | " | 08/26/03 | EPA 6020 | |
| Boron | ND | | 4.7 | " | 1 | " | " | 08/18/03 | EPA 6010B | W |
| Barium | 100 | | 0.47 | " | " | " | " | " | " | |
| Beryllium | 0.32 | | 0.047 | " | " | " | " | " | " | |
| Calcium | 2400 | | 47 | " | " | " | " | " | " | |
| Cadmium | ND | | 0.47 | " | " | " | " | " | " | |
| Cobalt | 11 | | 0.33 | " | " | " | " | " | " | J |
| Chromium | 56 | | 0.47 | " | " | " | " | " | " | J |
| Hexavalent Chromium | 0.64 | | 0.21 | " | " | 3080258 | 08/14/03 | 08/15/03 | EPA 7196A | J |
| Copper | 33 | | 0.94 | " | " | 3080213 | 08/18/03 | 08/18/03 | EPA 6010B | |
| Iron | 21000 | | 24 | " | " | " | " | " | " | |
| Mercury | 0.020 | | 0.017 | " | " | 3080172 | 08/13/03 | 08/14/03 | EPA 7471A | J |
| Potassium | 1500 | | 120 | " | " | 3080213 | 08/18/03 | 08/18/03 | EPA 6010B | |
| Magnesium | 5900 | | 24 | " | " | " | " | " | " | |
| Manganese | 410 | | 0.47 | " | " | " | " | " | " | |
| Molybdenum | 1.1 | | 0.94 | " | " | " | " | " | " | |
| Sodium | 220 | | 24 | " | " | " | " | " | " | |
| Nickel | 54 | | 1.4 | " | " | " | " | " | " | J |
| Lead | 8.2 | | 0.24 | " | " | " | " | 08/22/03 | EPA 6020 | |
| Antimony | ND | | 0.24 | " | " | " | " | 08/21/03 | " | W |
| Selenium | ND | | 0.47 | " | " | " | " | 08/22/03 | " | |
| Titanium | 610 | | 0.94 | " | " | " | " | 08/18/03 | EPA 6010B | |
| Thallium | 0.14 | | 0.094 | " | " | " | " | 08/30/03 | EPA 6020 | |
| Vanadium | 47 | | 0.47 | " | " | " | " | 08/18/03 | EPA 6010B | |
| Zinc | 68 | | 9.4 | " | 10 | " | " | 08/27/03 | " | J |

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308071
Reported:
09/09/03 16:50

Total Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB06-15 (P308071-06) Soil Sampled: 08/04/03 12:45 Received: 08/04/03 14:17 | | | | | | | | | | |
| Silver | ND | | 0.31 | mg/kg | 1 | 3080213 | 08/18/03 | 08/18/03 | EPA 6010B | W |
| Aluminum | 10000 | | 22 | " | " | " | " | " | " | W |
| Arsenic | 3.0 | | 0.45 | " | 5 | " | " | 08/26/03 | EPA 6020 | |
| Boron | ND | | 4.5 | " | 1 | " | " | 08/18/03 | EPA 6010B | W |
| Barium | 70 | | 0.45 | " | " | " | " | " | " | |
| Beryllium | 0.24 | | 0.045 | " | " | " | " | " | " | |
| Calcium | 1800 | | 45 | " | " | " | " | " | " | |
| Cadmium | ND | | 0.45 | " | " | " | " | " | " | |
| Cobalt | 5.5 | | 0.31 | " | " | " | " | " | " | J |
| Chromium | 30 | | 0.45 | " | " | " | " | " | " | J |
| Hexavalent Chromium | 0.39 | | 0.20 | " | " | 3080258 | 08/14/03 | 08/15/03 | EPA 7196A | J |
| Copper | 24 | | 0.89 | " | " | 3080213 | 08/18/03 | 08/18/03 | EPA 6010B | |
| Iron | 15000 | | 22 | " | " | " | " | " | " | |
| Mercury | 0.046 | | 0.018 | " | " | 3080172 | 08/13/03 | 08/14/03 | EPA 7471A | J |
| Potassium | 1200 | | 110 | " | " | 3080213 | 08/18/03 | 08/18/03 | EPA 6010B | |
| Magnesium | 3300 | | 22 | " | " | " | " | " | " | |
| Manganese | 190 | | 0.45 | " | " | " | " | " | " | |
| Molybdenum | ND | | 0.89 | " | " | " | " | " | " | |
| Sodium | 170 | | 22 | " | " | " | " | " | " | |
| Nickel | 23 | | 1.3 | " | " | " | " | " | " | J |
| Lead | 3.4 | | 0.22 | " | " | " | " | 08/23/03 | EPA 6020 | |
| Antimony | ND | | 0.22 | " | " | " | " | 08/21/03 | " | |
| Selenium | ND | | 0.45 | " | " | " | " | 08/23/03 | " | |
| Titanium | 500 | | 0.89 | " | " | " | " | 08/18/03 | EPA 6010B | |
| Thallium | ND | | 0.089 | " | " | " | " | 08/23/03 | EPA 6020 | |
| Vanadium | 37 | | 0.45 | " | " | " | " | 08/18/03 | EPA 6010B | |
| Zinc | 46 | | 8.9 | " | 10 | " | " | 08/27/03 | " | J |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 5, 2003
LDC Report Date: October 29, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5
32D-SB05-7

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010 and 7471A. The metals analyzed included Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|------------|---------------------|----------------------|-----------------|------|--------|
| 32D-SB06-35 (32D-SB06-2.5, 32D-SB06-7) | Aluminum | NR (80-120) | NR (80-120) | 14 (20) | None | None |
| | Antimony | 10 (80-120) | 6 (80-120) | 42 (20) | R/J | A |
| | Barium | NR (80-120) | 45 (80-120) | 15 (20) | None | None |
| | Boron | 75 (80-120) | 65 (80-120) | 13 (20) | UJ/J | A |
| | Calcium | NR (80-120) | NR (80-120) | 3 (20) | None | None |
| | Iron | 0 (80-120) | 367 (80-120) | 5 (20) | None | None |
| | Magnesium | 235 (80-120) | 347 (80-120) | 6 (20) | None | None |
| | Manganese | NR (80-120) | 131 (80-120) | 8 (20) | None | None |
| | Molybdenum | 73 (80-120) | 63 (80-120) | 12 (20) | UJ/J | A |

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|-------------------------------------|-----------|---------------------|----------------------|-----------------|------|--------|
| | Nickel | 23 (80-120) | 40 (80-120) | 9 (20) | R/J | A |
| | Potassium | 160 (80-120) | 143 (80-120) | 3 (20) | None | None |
| | Selenium | 80 (80-120) | 74 (80-120) | 8 (20) | UJ/J | A |
| | Sodium | 113 (80-120) | 70 (80-120) | 18 (20) | UJ/J | A |
| | Titanium | 576 (80-120) | 89 (80-120) | 7 (20) | None | None |
| | Zinc | 91 (80-120) | 150 (80-120) | 22 (20) | UJ/J | A |

The concentrations of aluminum, barium, calcium, iron, magnesium, manganese, potassium, and titanium in the sample were greater than four times the spike amount. No qualifications of these analytes are necessary.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS
Metals - Data Qualification Summary - SDG P308126

| SDG | Sample | Analyte | Flag | A or P | Reason |
|---------|----------------------------|---|----------------------------|--------|--|
| P308126 | 32D-SB05-2.5 32D-SB05-7 | Boron Molybdenum Selenium Sodium | J detects UJ nondetects | A | Matrix spike % Recovery below control limits |
| P308126 | 32D-SB05-2.5 32D-SB05-7 | Antimony Nickel | J detects R nondetects | A | Matrix spike % Recovery below 30% |
| P308126 | 32D-SB05-2.5 32D-SB05-7 | Zinc | J detects | A | Matrix spike % Recovery above control limits |
| P308126 | 32D-SB05-2.5 32D-SB05-7 | Antimony Zinc | J detects UJ nondetects | A | Matrix spike RPD above control limits |

Aerojet RI/FS
Metals - Laboratory Blank Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|-----------------|-------|----------|---------|----------|----------|-----------|--------|
| 32D-SB05-2.5 (P308126-04) Soil Sampled: 08/05/03 10:15 Received: 08/05/03 13:17 | | | | | | | | | | |
| Silver | ND | | 0.24 | mg/kg | 5 | 3080210 | 08/12/03 | 08/28/03 | EPA 6020 | |
| Aluminum | 5800 | | 24 | " | 1 | " | " | 08/22/03 | EPA 6010B | |
| Arsenic | 2.7 | 0.33 | 2.4 | " | 5 | " | " | 08/28/03 | EPA 6020 | |
| Boron | ND | | 4.7 | " | 1 | " | " | 08/22/03 | EPA 6010B | WJ |
| Barium | 31 | | 0.47 | " | " | " | " | " | " | |
| Beryllium | 0.096 | | 0.047 | " | " | " | " | " | " | |
| Calcium | 2300 | | 47 | " | " | " | " | " | " | |
| Cadmium | ND | | 0.24 | " | 5 | " | " | 08/28/03 | EPA 6020 | R-01 |
| Cobalt | 5.4 | | 0.33 | " | 1 | " | " | 08/22/03 | EPA 6010B | |
| Chromium | 18 | | 0.47 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.13 | " | " | 3080394 | 08/21/03 | 08/22/03 | EPA 7196A | |
| Copper | 26 | | 0.94 | " | " | 3080210 | 08/12/03 | 08/22/03 | EPA 6010B | |
| Iron | 9400 | | 24 | " | " | " | " | " | " | |
| Mercury | ND | | 0.020 | " | " | 3080173 | 08/19/03 | 08/20/03 | EPA 7471A | |
| Potassium | 680 | | 120 | " | " | 3080210 | 08/12/03 | 08/22/03 | EPA 6010B | |
| Magnesium | 3300 | | 24 | " | " | " | " | " | " | |
| Manganese | 120 | | 0.47 | " | " | " | " | " | " | |
| Molybdenum | ND | | 0.94 | " | " | " | " | " | " | WJ |
| Sodium | 230 | | 24 | " | " | " | " | " | " | J |
| Nickel | 11 | | 1.4 | " | " | " | " | " | " | J |
| Lead | 2.3 | 0.042 | 1.2 | " | 5 | " | " | 08/28/03 | EPA 6020 | |
| Antimony | ND | | 1.2 | " | " | " | " | " | " | R-01 R |
| Selenium | ND | | 0.47 | " | 1 | " | " | 08/23/03 | " | WJ |
| Titanium | 280 | | 0.94 | " | " | " | " | 08/22/03 | EPA 6010B | |
| Thallium | ND | | 0.47 | " | 5 | " | " | 08/28/03 | EPA 6020 | R-01 |
| Vanadium | 19 | | 0.47 | " | 1 | " | " | 08/22/03 | EPA 6010B | |
| Zinc | 25 | | 0.94 | " | " | " | " | " | " | J |



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|--------|-----------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB05-7 (P308126-05) Soil Sampled: 08/05/03 10:25 Received: 08/05/03 13:17 | | | | | | | | | | |
| Silver | ND | | 0.050 | mg/kg | 1 | 3080210 | 08/12/03 | 08/23/03 | EPA 6020 | |
| Aluminum | 9100 | | 25 | " | " | " | " | 08/22/03 | EPA 6010B | |
| Arsenic | 5.1 | 0.36 | 2.5 | " | 5 | " | " | 08/28/03 | EPA 6020 | |
| Boron | ND | | 5.0 | " | 1 | " | " | 08/22/03 | EPA 6010B | |
| Barium | 28 | | 0.50 | " | " | " | " | " | " | W |
| Beryllium | 0.092 | | 0.050 | " | " | " | " | " | " | |
| Calcium | 4100 | | 50 | " | " | " | " | " | " | |
| Cadmium | 0.25 | | 0.25 | " | 5 | " | " | 08/28/03 | EPA 6020 | |
| Cobalt | 9.6 | | 0.35 | " | 1 | " | " | 08/22/03 | EPA 6010B | |
| Chromium | 18 | | 0.50 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.096 | " | " | 3080394 | 08/21/03 | 08/22/03 | EPA 7196A | |
| Copper | 34 | | 1.0 | " | " | 3080210 | 08/12/03 | 08/22/03 | EPA 6010B | |
| Iron | 19000 | | 25 | " | " | " | " | " | " | |
| Mercury | ND | | 0.014 | " | " | 3080173 | 08/19/03 | 08/20/03 | EPA 7471A | |
| Potassium | 410 | | 120 | " | " | 3080210 | 08/12/03 | 08/22/03 | EPA 6010B | |
| Magnesium | 5900 | | 25 | " | " | " | " | " | " | |
| Manganese | 700 | | 0.50 | " | " | " | " | " | " | |
| Molybdenum | ND | | 1.0 | " | " | " | " | " | " | W |
| Sodium | 160 | | 25 | " | " | " | " | " | " | J |
| Nickel | 15 | | 1.5 | " | " | " | " | " | " | J |
| Lead | 1.9 | 0.0090 | 0.25 | " | " | " | " | 08/23/03 | EPA 6020 | |
| Antimony | ND | | 0.25 | " | " | " | " | " | " | R |
| Selenium | ND | | 0.50 | " | " | " | " | " | " | W |
| Titanium | 400 | | 1.0 | " | " | " | " | 08/22/03 | EPA 6010B | |
| Thallium | 0.12 | | 0.10 | " | " | " | " | 08/23/03 | EPA 6020 | |
| Vanadium | 41 | | 0.50 | " | " | " | " | 08/22/03 | EPA 6010B | |
| Zinc | 45 | | 1.0 | " | " | " | " | " | " | J |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 15, 2003
LDC Report Date: October 22, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308354

Sample Identification

10D-SS10
10D-SS21
10D-SS22

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010 and 7470A. The metals analyzed included Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Silver, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

| Sample | Analyte | Total Days From Sample Collection Until Analysis | Required Holding Time (in Days) From Sample Collection Until Analysis | Flag | A or P |
|----------------------------------|---------|--|---|----------------------------|--------|
| 10D-SS10 10D-SS21 10D-SS22 | Mercury | 41 | 28 | J detects UJ nondetects | P |

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|---|-----------|---------------------|----------------------|-----------------|------|--------|
| 11D-SNS09 (10D-SS10, 10D-SS21, 10D-SS22) | Arsenic | 108 (80-120) | 133 (80-120) | 21 (20) | J/UJ | A |
| | Barium | 105 (80-120) | 121 (80-120) | 15 (20) | J | A |
| | Beryllium | 106 (80-120) | 128 (80-120) | 19 (20) | J | A |
| | Cadmium | 111 (80-120) | 124 (80-120) | 11 (20) | J | A |
| | Chromium | 106 (80-120) | 128 (80-120) | 19 (20) | J | A |
| | Copper | 105 (80-120) | 122 (80-120) | 15 (20) | J | A |
| | Lead | 106 (80-120) | 127 (80-120) | 18 (20) | J | A |
| | Manganese | 104 (80-120) | 125 (80-120) | 18 (20) | J | A |
| | Nickel | 104 (80-120) | 128 (80-120) | 21 (20) | J/UJ | A |
| | Silver | 107 (80-120) | 125 (80-120) | 15 (20) | J | A |
| | Zinc | 102 (80-120) | 128 (80-120) | 15 (20) | J | A |

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

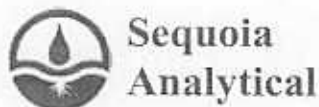
No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS
Metals - Data Qualification Summary - SDG P308354

| SDG | Sample | Analyte | Flag | A or P | Reason |
|---------|----------------------------------|--|----------------------------|--------|--|
| P308354 | 10D-SS10 10D-SS21 10D-SS22 | Mercury | J detects UJ nondetects | P | Analysis performed past holding time |
| P308354 | 10D-SS10 10D-SS21 10D-SS22 | Arsenic Barium Beryllium Cadmium Chromium Copper Lead Manganese Nickel Silver Zinc | J detects | A | Matrix spike % Recovery above control limits |
| P308354 | 10D-SS10 10D-SS21 10D-SS22 | Arsenic Nickel | J detects UJ nondetects | A | Matrix spike RPD above control limits |

Aerojet RI/FS
Metals - Laboratory Blank Data Qualification Summary - SDG P308354

No Sample Data Qualified in this SDG



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
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Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P308354
Reported:
09/02/03 15:52

DI STLC CAM Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----------------|-------|----------|---------|----------|----------|-----------|---------|
| 10D-SS10 (P308354-01) Soil Sampled: 07/15/03 13:45 Received: 08/19/03 16:01 | | | | | | | | | |
| Silver | ND | 0.035 | mg/l | 1 | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | W |
| Arsenic | ND | 0.50 | " | " | " | " | " | " | W |
| Barium | 0.12 | 0.050 | " | " | " | " | " | " | W |
| Beryllium | ND | 0.0050 | " | " | " | " | " | " | |
| Cadmium | ND | 0.050 | " | " | " | " | " | " | |
| Chromium | ND | 0.050 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.0050 | " | " | 3080419 | 08/25/03 | 08/28/03 | EPA 7196 | HT-05 W |
| Copper | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Mercury | ND | 0.00025 | " | " | 3080361 | 08/25/03 | 08/25/03 | EPA 7470A | HT-05 W |
| Manganese | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Nickel | ND | 0.15 | " | " | " | " | " | " | |
| Lead | ND | 0.38 | " | " | " | " | " | " | |
| Zinc | 0.40 | 0.10 | " | " | " | " | " | " | W |
| 10D-SS21 (P308354-02) Soil Sampled: 07/15/03 14:00 Received: 08/19/03 16:01 | | | | | | | | | |
| Silver | ND | 0.035 | mg/l | 1 | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | W |
| Arsenic | ND | 0.50 | " | " | " | " | " | " | W |
| Barium | 0.29 | 0.050 | " | " | " | " | " | " | W |
| Beryllium | ND | 0.0050 | " | " | " | " | " | " | |
| Cadmium | ND | 0.050 | " | " | " | " | " | " | |
| Chromium | ND | 0.050 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.0050 | " | " | 3080419 | 08/25/03 | 08/28/03 | EPA 7196 | HT-05 W |
| Copper | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Mercury | ND | 0.00025 | " | " | 3080361 | 08/25/03 | 08/25/03 | EPA 7470A | HT-05 W |
| Manganese | 0.075 | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Nickel | ND | 0.15 | " | " | " | " | " | " | |
| Lead | ND | 0.38 | " | " | " | " | " | " | |
| Zinc | 2.0 | 0.10 | " | " | " | " | " | " | W |

Sequoia Analytical - Petaluma

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.



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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P308354
Reported:
09/02/03 15:52

DI STLC CAM Metals by EPA 6000/7000 Series Methods

Sequoia Analytical - Petaluma

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----------------|-------|----------|---------|----------|----------|-----------|---------|
| 10D-SS22 (P308354-03) Soil Sampled: 07/15/03 14:05 Received: 08/19/03 16:01 | | | | | | | | | |
| Silver | ND | 0.035 | mg/l | 1 | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | DU anal |
| Arsenic | ND | 0.50 | " | " | " | " | " | " | W |
| Barium | 0.14 | 0.050 | " | " | " | " | " | " | J |
| Beryllium | ND | 0.0050 | " | " | " | " | " | " | |
| Cadmium | ND | 0.050 | " | " | " | " | " | " | |
| Chromium | ND | 0.050 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.0050 | " | " | 3080419 | 08/25/03 | 08/28/03 | EPA 7196 | HT-05 W |
| Copper | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Mercury | ND | 0.00025 | " | " | 3080361 | 08/25/03 | 08/25/03 | EPA 7470A | HT-05 W |
| Manganese | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Nickel | ND | 0.15 | " | " | " | " | " | " | |
| Lead | ND | 0.38 | " | " | " | " | " | " | |
| Zinc | 0.94 | 0.10 | " | " | " | " | " | " | J |

W
11/17/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 14, 2003
LDC Report Date: October 22, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308355

Sample Identification

11D-SNS09
11D-SNS08
11D-SNS07

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B and 7470A. The metals analyzed included Arsenic, Barium, Beryllium, Cadmium, Chromium, Copper, Lead, Manganese, Mercury, Nickel, Silver, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

| Sample | Analyte | Total Days From Sample Collection Until Analysis | Required Holding Time (in Days) From Sample Collection Until Analysis | Flag | A or P |
|-------------------------------------|---------|--|---|----------------------------|--------|
| 11D-SNS09 11D-SNS08 11D-SNS07 | Mercury | 40 | 28 | J detects UJ nondetects | P |

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|-----------|---------------------|----------------------|-----------------|------|--------|
| 11D-SNS09 (11D-SNS09, 11D-SNS08, 11D-SNS07) | Arsenic | 108 (80-120) | 133 (80-120) | 21 (20) | J/UJ | A |
| | Barium | 105 (80-120) | 121 (80-120) | 15 (20) | J | A |
| | Beryllium | 106 (80-120) | 128 (80-120) | 19 (20) | J | A |
| | Cadmium | 111 (80-120) | 124 (80-120) | 11 (20) | J | A |
| | Chromium | 106 (80-120) | 128 (80-120) | 19 (20) | J | A |
| | Copper | 105 (80-120) | 122 (80-120) | 15 (20) | J | A |
| | Lead | 106 (80-120) | 127 (80-120) | 18 (20) | J | A |
| | Manganese | 104 (80-120) | 125 (80-120) | 18 (20) | J | A |
| | Nickel | 104 (80-120) | 128 (80-120) | 21 (20) | J/UJ | A |
| | Silver | 107 (80-120) | 125 (80-120) | 15 (20) | J | A |
| | Zinc | 102 (80-120) | 128 (80-120) | 15 (20) | J | A |

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS
Metals - Data Qualification Summary - SDG P308355

| SDG | Sample | Analyte | Flag | A or P | Reason |
|---------|-------------------------------------|--|----------------------------|--------|--|
| P308355 | 11D-SNS09 11D-SNS08 11D-SNS07 | Mercury | J detects UJ nondetects | P | Analysis performed past holding time |
| P308355 | 11D-SNS09 11D-SNS08 11D-SNS07 | Arsenic Barium Beryllium Cadmium Chromium Copper Lead Manganese Nickel Silver Zinc | J detects | A | Matrix spike % Recovery above control limits |
| P308355 | 11D-SNS09 11D-SNS08 11D-SNS07 | Arsenic Nickel | J detects UJ nondetects | A | Matrix spike RPD above control limits |

Aerojet RI/FS
Metals - Laboratory Blank Data Qualification Summary - SDG P308355

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308355
Reported:
08/26/03 17:37

DI STLC CAM Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|---------------|--------------------|-------|----------|---------|----------|----------|-----------|---------|
| 11D-SNS09 (P308355-01) Soil Sampled: 07/14/03 10:45 Received: 08/19/03 16:02 DUAL | | | | | | | | | |
| Silver | ND | 0.035 | mg/l | 1 | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Arsenic | ND | 0.50 | " | " | " | " | " | " | W |
| Barium | 0.054 | 0.050 | " | " | " | " | " | " | J |
| Beryllium | ND | 0.0050 | " | " | " | " | " | " | |
| Cadmium | ND | 0.050 | " | " | " | " | " | " | |
| Chromium | ND | 0.050 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.0050 | " | " | 3080395 | 08/21/03 | 08/23/03 | EPA 7196 | HT-05 R |
| Copper | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Mercury | ND | 0.00025 | " | " | 3080361 | 08/25/03 | 08/25/03 | EPA 7470A | HT-05 W |
| Manganese | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Nickel | ND | 0.15 | " | " | " | " | " | " | W |
| Lead | ND | 0.38 | " | " | " | " | " | " | |
| Zinc | 1.4 | 0.10 | " | " | " | " | " | " | J |
| 11D-SNS08 (P308355-02) Soil Sampled: 07/14/03 10:50 Received: 08/19/03 16:02 | | | | | | | | | |
| Silver | ND | 0.035 | mg/l | 1 | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Arsenic | ND | 0.50 | " | " | " | " | " | " | W |
| Barium | 0.12 | 0.050 | " | " | " | " | " | " | J |
| Beryllium | ND | 0.0050 | " | " | " | " | " | " | |
| Cadmium | ND | 0.050 | " | " | " | " | " | " | |
| Chromium | ND | 0.050 | " | " | " | " | " | " | |
| Hexavalent Chromium | 0.0068 | 0.0050 | " | " | 3080395 | 08/21/03 | 08/23/03 | EPA 7196 | HT-05 J |
| Copper | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Mercury | ND | 0.00025 | " | " | 3080361 | 08/25/03 | 08/25/03 | EPA 7470A | HT-05 W |
| Manganese | 0.13 | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Nickel | ND | 0.15 | " | " | " | " | " | " | W |
| Lead | ND | 0.38 | " | " | " | " | " | " | |
| Zinc | 3.6 | 0.10 | " | " | " | " | " | " | J |

W
11/17/03

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308355
Reported:
08/26/03 17:37

DI STLC CAM Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SNS27 (P308355-03) Soil Sampled: 07/14/03 13:40 Received: 08/19/03 16:02 <i>DI Qual</i> | | | | | | | | | |
| Silver | ND | 0.035 | mg/l | 1 | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Arsenic | ND | 0.50 | " | " | " | " | " | " | |
| Barium | 0.23 | 0.050 | " | " | " | " | " | " | |
| Beryllium | ND | 0.0050 | " | " | " | " | " | " | |
| Cadmium | ND | 0.050 | " | " | " | " | " | " | |
| Chromium | ND | 0.050 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.0050 | " | " | 3080395 | 08/21/03 | 08/23/03 | EPA 7196 | HT-05 |
| Copper | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Mercury | ND | 0.00025 | " | " | 3080361 | 08/25/03 | 08/25/03 | EPA 7470A | HT-05 |
| Manganese | 0.065 | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Nickel | ND | 0.15 | " | " | " | " | " | " | |
| Lead | ND | 0.38 | " | " | " | " | " | " | |
| Zinc | 0.77 | 0.10 | " | " | " | " | " | " | |

5D-SNS07 (P308355-04) Soil **Sampled: 07/15/03 09:35** **Received: 08/19/03 16:02**

| | | | | | | | | | |
|---------------------|-------------|---------|------|---|---------|----------|----------|-----------|----------------|
| Silver | ND | 0.035 | mg/l | 1 | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Arsenic | ND | 0.50 | " | " | " | " | " | " | |
| Barium | 0.15 | 0.050 | " | " | " | " | " | " | <i>W</i> |
| Beryllium | ND | 0.0050 | " | " | " | " | " | " | <i>J</i> |
| Cadmium | ND | 0.050 | " | " | " | " | " | " | |
| Chromium | ND | 0.050 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | 0.0050 | " | " | 3080395 | 08/21/03 | 08/23/03 | EPA 7196 | HT-05 <i>R</i> |
| Copper | ND | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | |
| Mercury | ND | 0.00025 | " | " | 3080361 | 08/25/03 | 08/25/03 | EPA 7470A | HT-05 <i>W</i> |
| Manganese | 0.11 | 0.050 | " | " | 3080432 | 08/22/03 | 08/23/03 | EPA 6010B | <i>W</i> |
| Nickel | ND | 0.15 | " | " | " | " | " | " | <i>W</i> |
| Lead | ND | 0.38 | " | " | " | " | " | " | |
| Zinc | 0.39 | 0.10 | " | " | " | " | " | " | <i>J</i> |

CJ 11/17/03

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: August 20, 2003
LDC Report Date: October 22, 2003
Matrix: Soil
Parameters: Lead
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308444

Sample Identification

C4-SNS03
C4-SNS05
C4-SNS07

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6020 for Lead.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICS was not evaluated for Level III validation.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS

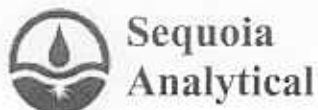
Lead - Data Qualification Summary - SDG P308444

No Sample Data Qualified in this SDG

Aerojet RI/FS

Lead - Laboratory Blank Data Qualification Summary - SDG P308444

No Sample Data Qualified in this SDG



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Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
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Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308444
Reported:
09/09/03 18:21

Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma

| Analyte | Result | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|--------------------|-------|----------|---------|----------|----------|----------|-------|
| C4-SNS03 (P308444-01) Soil Sampled: 08/20/03 10:25 Received: 08/20/03 14:23 | | | | | | | | | |
| Lead | 110 | 0.24 | mg/kg | 1 | 3080523 | 08/26/03 | 09/06/03 | EPA 6020 | |
| C4-SNS04 (P308444-02) Soil Sampled: 08/20/03 10:40 Received: 08/20/03 14:23 | | | | | | | | | |
| Lead | 3.4 | 0.25 | mg/kg | 1 | 3080523 | 08/26/03 | 09/06/03 | EPA 6020 | |
| C4-SNS05 (P308444-03) Soil Sampled: 08/20/03 10:50 Received: 08/20/03 14:23 | | | | | | | | | |
| Lead | 94 | 0.25 | mg/kg | 1 | 3080523 | 08/26/03 | 09/06/03 | EPA 6020 | |
| C4-SNS06 (P308444-04) Soil Sampled: 08/20/03 11:00 Received: 08/20/03 14:23 | | | | | | | | | |
| Lead | 20 | 0.25 | mg/kg | 1 | 3080523 | 08/26/03 | 09/06/03 | EPA 6020 | |
| C4-SNS07 (P308444-05) Soil Sampled: 08/20/03 11:10 Received: 08/20/03 14:23 | | | | | | | | | |
| Lead | 320 | 0.25 | mg/kg | 1 | 3080523 | 08/26/03 | 09/06/03 | EPA 6020 | |

CS
11/7/03

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: July 15, 2003
LDC Report Date: October 22, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P309311

Sample Identification

10D-SS10
10D-SS21
10D-SS22

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 6010B, 6020, and 7471A. The metals analyzed included Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Titanium, Vanadium, and Zinc.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

| Sample | Analyte | Total Days From Sample Collection Until Analysis | Required Holding Time (in Days) From Sample Collection Until Analysis | Flag | A or P |
|----------------------------------|---------|--|---|---------------------------|--------|
| 10D-SS10 10D-SS21 10D-SS22 | Mercury | 71 | 28 | J detects R nondetects | P |

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. The matrix spike sample, C15-SS07, was a project specific sample from SDG P307335.

Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|-------------------------------|---------|------------------|-------------------|--------------|------|--------|
|-------------------------------|---------|------------------|-------------------|--------------|------|--------|

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|-----------|---------------------|----------------------|-----------------|-----------|--------|
| C15-SS07 (10D-SS10, 10D-SS21, 10D-SS22) | Aluminum | NR (80-120) | NR (80-120) | 1 (20) | None | None |
| | Antimony | 37 (80-120) | 35 (80-120) | 2 (20) | J/UJ | A |
| | Arsenic | 81 (80-120) | 78 (80-120) | 0.2 (20) | J/UJ | A |
| | Barium | 143 (80-120) | 148 (80-120) | 2 (20) | None | None |
| | Calcium | 158 (80-120) | 198 (80-120) | 5 (20) | None | None |
| | Chromium | 125 (80-120) | 121 (80-120) | 0 (20) | J detects | A |
| | Iron | NR (80-120) | NR (80-120) | 0.4 (20) | None | None |
| | Magnesium | 225 (80-120) | 266 (80-120) | 1 (20) | None | None |
| | Manganese | 454 (80-120) | 191 (80-120) | 6 (20) | None | None |
| | Nickel | 125 (80-120) | 125 (80-120) | 2 (20) | J detects | A |
| | Potassium | 162 (80-120) | 150 (80-120) | 0.8 (20) | None | None |
| | Selenium | 75 (80-120) | 73 (80-120) | 0.9 (20) | J/UJ | A |
| | Titanium | 648 (80-120) | 644 (80-120) | 0.8 (20) | None | None |
| | Zinc | 82 (80-120) | 131 (80-120) | 9 (20) | J detects | A |

The sample concentrations of aluminum, barium, calcium, iron, magnesium, manganese, potassium, and titanium were greater than four times that of the spike concentrations. Therefore, no qualifications are necessary.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

ICP-MS was not utilized in this SDG.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS
Metals - Data Qualification Summary - SDG P309311

| SDG | Sample | Analyte | Flag | A or P | Reason |
|---------|----------------------------------|---------------------------------|----------------------------|--------|--|
| P309311 | 10D-SS10 10D-SS21 10D-SS22 | Mercury | J detects R nondetects | P | Analysis performed past holding time |
| P309311 | 10D-SS10 10D-SS21 10D-SS22 | Chromium Nickel Zinc | J detects | A | Matrix spike % Recovery above control limits |
| P309311 | 10D-SS10 10D-SS21 10D-SS22 | Antimony Arsenic Selenium | J detects UJ nondetects | A | Matrix spike % Recovery below control limits |

Aerojet RI/FS
Metals - Laboratory Blank Data Qualification Summary - SDG P309311

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P309311
Reported:
09/24/03 18:05

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SS22 (P309311-03) Soil Sampled: 07/15/03 14:05 Received: 09/17/03 15:32 | | | | | | | | | | |
| Silver | 8.4 | | 0.079 | mg/kg | 1 | 3070440 | 07/24/03 | 09/19/03 | EPA 6020 | |
| Aluminum | 26000 | | 40 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Arsenic | 5.8 | | 4.0 | " | 5 | " | " | 09/24/03 | EPA 6020 | |
| Boron | ND | | 7.9 | " | 1 | " | " | 07/28/03 | EPA 6010B | |
| Barium | 230 | | 0.79 | " | " | " | " | " | " | |
| Beryllium | 0.83 | | 0.079 | " | " | " | " | " | " | |
| Calcium | 3900 | | 79 | " | " | " | " | " | " | |
| Cadmium | 1.6 | | 0.079 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Cobalt | 23 | | 0.56 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Chromium | 85 | | 0.79 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 1.0 | " | 5 | 3090441 | 09/19/03 | 09/19/03 | EPA 7196A | HT-05 |
| Copper | 66 | | 1.6 | " | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 43000 | | 200 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.20 | | 0.019 | " | 1 | 3090472 | 09/24/03 | 09/24/03 | EPA 7471A | HT-05 |
| Potassium | 2200 | | 200 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 6300 | | 40 | " | " | " | " | " | " | |
| Manganese | 900 | | 0.79 | " | " | " | " | " | " | |
| Molybdenum | 2.2 | | 1.6 | " | " | " | " | " | " | |
| Sodium | 210 | | 40 | " | " | " | " | " | " | |
| Nickel | 66 | | 2.4 | " | " | " | " | " | " | |
| Lead | 38 | | 0.40 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Antimony | 0.52 | | 0.40 | " | " | " | " | 09/19/03 | " | |
| Selenium | 0.18 | 0.057 | 0.79 | " | " | " | " | " | " | |
| Titanium | 880 | | 1.6 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | ND | | 0.16 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Vanadium | 110 | | 0.79 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 1000 | | 1.6 | " | " | " | " | " | " | |

DU Qual

HT-05

HT-05

J J

J



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P309311
Reported:
09/24/03 18:05

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|---------|
| 10D-SS10 (P309311-01) Soil Sampled: 07/15/03 13:45 Received: 09/17/03 15:32 | | | | | | | | | | |
| Silver | 0.31 | | 0.089 | mg/kg | 1 | 3070440 | 07/24/03 | 09/19/03 | EPA 6020 | |
| Aluminum | 14000 | | 45 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Arsenic | 6.4 | | 0.89 | " | " | " | " | 09/19/03 | EPA 6020 | J |
| Boron | ND | | 8.9 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 110 | | 0.89 | " | " | " | " | " | " | |
| Beryllium | 0.42 | | 0.089 | " | " | " | " | " | " | |
| Calcium | 2600 | | 89 | " | " | " | " | " | " | |
| Cadmium | 0.64 | | 0.089 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Cobalt | 13 | | 0.62 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Chromium | 50 | | 0.89 | " | " | " | " | " | " | |
| Hexavalent Chromium | 0.62 | | 0.20 | " | " | 3090441 | 09/19/03 | 09/19/03 | EPA 7196A | HT-05 J |
| Copper | 32 | | 1.8 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 24000 | | 220 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.11 | | 0.017 | " | 1 | 3090472 | 09/24/03 | 09/24/03 | EPA 7471A | HT-05 R |
| Potassium | 1200 | | 220 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 5000 | | 45 | " | " | " | " | " | " | |
| Manganese | 440 | | 0.89 | " | " | " | " | " | " | |
| Molybdenum | ND | | 1.8 | " | " | " | " | " | " | |
| Sodium | 200 | | 45 | " | " | " | " | " | " | |
| Nickel | 44 | | 2.7 | " | " | " | " | " | " | |
| Lead | 13 | | 0.45 | " | " | " | " | 09/19/03 | EPA 6020 | J |
| Antimony | ND | | 0.45 | " | " | " | " | 09/19/03 | " | |
| Selenium | 0.12 | 0.064 | 0.89 | " | " | " | " | " | " | J W |
| Titanium | 590 | | 1.8 | " | " | " | " | 07/28/03 | EPA 6010B | J |
| Thallium | ND | | 0.18 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Vanadium | 57 | | 0.89 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 350 | | 1.8 | " | " | " | " | " | " | J |

DW Qual

J

R

J W

CJ 10/12/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P309311
Reported:
09/24/03 18:05

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-------|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 10D-SS21 (P309311-02) Soil Sampled: 07/15/03 14:00 Received: 09/17/03 15:32 | | | | | | | | | | |
| Silver | 1.3 | | 0.10 | mg/kg | 1 | 3070440 | 07/24/03 | 09/19/03 | EPA 6020 | |
| Aluminum | 19000 | | 50 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Arsenic | 8.4 | | 1.0 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Boron | ND | | 10 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Barium | 210 | | 1.0 | " | " | " | " | " | " | |
| Beryllium | 0.57 | | 0.10 | " | " | " | " | " | " | |
| Calcium | 4200 | | 100 | " | " | " | " | " | " | |
| Cadmium | 2.2 | | 0.10 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Cobalt | 22 | | 0.70 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Chromium | 71 | | 1.0 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 1.0 | " | 5 | 3090441 | 09/19/03 | 09/19/03 | EPA 7196A | HT-05 |
| Copper | 70 | | 2.0 | " | 1 | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Iron | 35000 | | 250 | " | 5 | " | " | 07/29/03 | " | |
| Mercury | 0.23 | | 0.016 | " | 1 | 3090472 | 09/24/03 | 09/24/03 | EPA 7471A | HT-05 |
| Potassium | 1800 | | 250 | " | " | 3070440 | 07/24/03 | 07/28/03 | EPA 6010B | |
| Magnesium | 5500 | | 50 | " | " | " | " | " | " | |
| Manganese | 690 | | 1.0 | " | " | " | " | " | " | |
| Molybdenum | 2.3 | | 2.0 | " | " | " | " | " | " | |
| Sodium | 280 | | 50 | " | " | " | " | " | " | |
| Nickel | 51 | | 3.0 | " | " | " | " | " | " | |
| Lead | 92 | | 0.50 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Antimony | 0.57 | | 0.50 | " | " | " | " | 09/19/03 | " | |
| Selenium | 0.19 | 0.072 | 1.0 | " | " | " | " | " | " | |
| Titanium | 860 | | 2.0 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Thallium | ND | | 0.20 | " | " | " | " | 09/19/03 | EPA 6020 | |
| Vanadium | 78 | | 1.0 | " | " | " | " | 07/28/03 | EPA 6010B | |
| Zinc | 1700 | | 2.0 | " | " | " | " | " | " | |

ERM/Aerojet
Data Validation Reports
LDC# 0310-02A6 through 0310-02S6

Hexavalent Chromium

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: July 14 and 15, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Hexavalent Chromium
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307257

Sample Identification

11D-SNS09
11D-SNS08
11D-SNS06
11D-SNS05
10D-SNS24
10D-SNS25
10D-SNS26
10D-SNS27
10D-SNS28
5D-SNS09
5D-SNS07

Introduction

This data review covers eleven soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|---|---------------------|---------------------|----------------------|-----------------|-----------------------------|--------|
| 11D-SNS09 (11D-SNS08 11D-SNS06 11D-SNS05 10D-SNS24 10D-SNS25 10D-SNS26 10D-SNS27 10D-SNS28 5D-SNS09 5D-SNS07) | Hexavalent chromium | 71 (75-125) | 93 (75-125) | 26 (20) | UJ nondetects, J detects | A |

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R)

were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Wet Chemistry - Data Qualification Summary - SDG P307257**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|---|---------------------|-----------------------------|---------------|--|
| P307257 | 11D-SNS09 11D-SNS08 11D-SNS06 11D-SNS05 10D-SNS24 10D-SNS25 10D-SNS26 10D-SNS27 10D-SNS28 5D-SNS09 5D-SNS07 | Hexavalent chromium | UJ nondetects, J detects | A | Matrix spike % recovery below control limits |

Aerojet RI/FS**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P307257**

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 16, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Hexavalent Chromium
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P307335

Sample Identification

C15-SS07
C15-SS06
C15-SS05
C15-SS08
A20-BML01
A20-BML03

Introduction

This data review covers six soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|---------------------|---------------------|----------------------|-----------------|-----------------------------|--------|
| C15-SS07 (C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03) | Hexavalent chromium | 73 (75-125) | 89 (75-125) | 19 (20) | UJ nondetects, J detects | A |

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Wet Chemistry - Data Qualification Summary - SDG P307335**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|---|---------------------|-----------------------------|---------------|--|
| P307335 | C15-SS07, C15-SS06, C15-SS05, C15-SS08, A20-BML01, A20-BML03 | Hexavalent chromium | UJ nondetects, J detects | A | Matrix spike % recovery below control limits |

Aerojet RI/FS**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P307335**

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: RI-FS
Project Manager: Bruce Lewis

P307335
Reported:
08/19/03 12:04

DI STLC CAM Metals by EPA 6000/7000 Series Methods Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|----------|-------|
| A20-BML01 (P307335-10) Soil Sampled: 07/16/03 10:20 Received: 07/16/03 14:25 | | | | | | | | | | |
| Hexavalent Chromium | ND | | 0.025 | mg/l | 5 | 3070608 | 07/31/03 | 07/31/03 | EPA 7196 | R-01 |
| A20-BML02 (P307335-11) Soil Sampled: 07/16/03 11:00 Received: 07/16/03 14:25 | | | | | | | | | | |
| Hexavalent Chromium | ND | | 0.025 | mg/l | 5 | 3070608 | 07/31/03 | 07/31/03 | EPA 7196 | R-01 |
| A20-BML04 (P307335-12) Soil Sampled: 07/16/03 11:30 Received: 07/16/03 14:25 | | | | | | | | | | |
| Hexavalent Chromium | ND | | 0.025 | mg/l | 5 | 3070608 | 07/31/03 | 07/31/03 | EPA 7196 | R-01 |
| A20-BML03 (P307335-13) Soil Sampled: 07/16/03 12:00 Received: 07/16/03 14:25 | | | | | | | | | | |
| Hexavalent Chromium | ND | | 0.025 | mg/l | 5 | 3070608 | 07/31/03 | 07/31/03 | EPA 7196 | R-01 |

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: August 1, 2003
LDC Report Date: November 12, 2003
Matrix: Soil
Parameters: Metals
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308047

Sample Identification

32D-SB07-5
32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B, 6020, and 7471A.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The ICSA and ICSAB solutions were analyzed once daily, not every eight hours.

The ICSA and ICSAB recovery results were not reported. Therefore, this parameter was not evaluated.

V. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|----------|---------------------|----------------------|-----------------|-----------------------------|--------|
| 32D-SB07-5MS/MSD (32D-SB07-5, 32D-SB07-10) | Antimony | 38 (80-120) | 39 (80-120) | 12 (20) | J detects, UJ nondetects | A |
| | Calcium | 91 (80-120) | 78 (80-120) | 15 (20) | | |
| | Copper | 51 (80-120) | 85 (80-120) | 13 (20) | | |
| | Zinc | 205 (80-120) | 137 (80-120) | 11 (20) | J detects | |

Matrix spike recoveries for aluminum, barium, iron, magnesium, manganese, potassium, and

titanium also exceeded QC limits, but as the sample concentrations were greater than four times the spike levels, no data were qualified due to these nonconformances.

VI. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VII. Internal Standard (ICP-MS)

Internal standard recoveries were not evaluated for Level III validation.

VIII. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

IX. ICP Serial Dilution

ICP serial dilution was not required by the method. A serial dilution was performed on sample 32D-SB07-5, but percent differences were not reported. Therefore, this parameter was not evaluated.

X. Sample Result Verification

Raw data were not reviewed for this SDG.

XI. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

XIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Lead - Data Qualification Summary - SDG P308047**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|---------------------------|---------------------------------|-----------------------------|---------------|--|
| P308047 | 32D-SB07-5 32D-SB07-10 | Antimony, Calcium, Copper | J detects, UJ nondetects | A | Matrix spike/matrix spike duplicate % recoveries below control limits |
| P308047 | 32D-SB07-5 32D-SB07-10 | Zinc | J detects | A | Matrix spike/matrix spike duplicate % recoveries above control limits |

Aerojet RI/FS**Lead - Laboratory Blank Data Qualification Summary - SDG P308047**

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-5 (P308047-02) Soil Sampled: 08/01/03 09:50 Received: 08/01/03 14:07 | | | | | | | | | | |
| Silver | ND | | 0.34 | mg/kg | 1 | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Aluminum | 15000 | | 24 | " | " | " | " | " | " | |
| Arsenic | 4.3 | | 0.48 | " | 5 | " | " | 08/26/03 | EPA 6020 | |
| Boron | ND | | 4.8 | " | 1 | " | " | 08/11/03 | EPA 6010B | |
| Barium | 100 | | 0.48 | " | " | " | " | " | " | |
| Beryllium | 0.36 | | 0.048 | " | " | " | " | " | " | |
| Calcium | 2400 | | 48 | " | " | " | " | " | " | J |
| Cadmium | ND | | 0.48 | " | " | " | " | " | " | |
| Cobalt | 9.4 | | 0.34 | " | " | " | " | " | " | |
| Chromium | 41 | | 0.48 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3080258 | 08/14/03 | 08/15/03 | EPA 7196A | uJ |
| Copper | 57 | | 0.96 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | J |
| Iron | 21000 | | 24 | " | " | " | " | " | " | |
| Mercury | 0.13 | | 0.017 | " | " | 3080172 | 08/13/03 | 08/14/03 | EPA 7471A | |
| Potassium | 1500 | | 120 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Magnesium | 4900 | | 24 | " | " | " | " | " | " | |
| Manganese | 330 | | 0.48 | " | " | " | " | " | " | |
| Molybdenum | 2.4 | | 0.96 | " | " | " | " | " | " | |
| Sodium | 220 | | 24 | " | " | " | " | " | " | |
| Nickel | 33 | | 1.4 | " | " | " | " | " | " | |
| Lead | 4.4 | | 0.24 | " | " | " | " | 08/21/03 | EPA 6020 | uJ |
| Antimony | ND | | 0.24 | " | " | " | " | " | " | |
| Selenium | ND | | 0.48 | " | " | " | " | 08/22/03 | " | |
| Titanium | 660 | | 0.96 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Thallium | 0.098 | | 0.096 | " | " | " | " | 08/21/03 | EPA 6020 | |
| Vanadium | 46 | | 0.48 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Zinc | 63 | | 0.96 | " | " | " | " | " | " | J |

DV
Qual.

11/14/03



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-----------|-------|
| 32D-SB07-10 (P308047-03) Soil Sampled: 08/01/03 10:05 Received: 08/01/03 14:07 | | | | | | | | | | |
| Silver | ND | | 0.32 | mg/kg | 1 | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Aluminum | 8300 | | 23 | " | " | " | " | " | " | |
| Arsenic | 11 | | 0.45 | " | 5 | " | " | 08/26/03 | EPA 6020 | |
| Boron | ND | | 4.5 | " | 1 | " | " | 08/11/03 | EPA 6010B | |
| Barium | 54 | | 0.45 | " | " | " | " | " | " | |
| Beryllium | 0.20 | | 0.045 | " | " | " | " | " | " | |
| Calcium | 2000 | | 45 | " | " | " | " | " | " | J |
| Cadmium | ND | | 0.45 | " | " | " | " | " | " | |
| Cobalt | 4.6 | | 0.32 | " | " | " | " | " | " | |
| Chromium | 18 | | 0.45 | " | " | " | " | " | " | |
| Hexavalent Chromium | ND | | 0.21 | " | " | 3080258 | 08/14/03 | 08/15/03 | EPA 7196A | UJ |
| Copper | 32 | | 0.90 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | J |
| Iron | 14000 | | 23 | " | " | " | " | " | " | |
| Mercury | ND | | 0.019 | " | " | 3080172 | 08/13/03 | 08/14/03 | EPA 7471A | |
| Potassium | 1100 | | 110 | " | " | 3080076 | 08/08/03 | 08/11/03 | EPA 6010B | |
| Magnesium | 3200 | | 23 | " | " | " | " | " | " | |
| Manganese | 160 | | 0.45 | " | " | " | " | " | " | |
| Molybdenum | ND | | 0.90 | " | " | " | " | " | " | |
| Sodium | 220 | | 23 | " | " | " | " | " | " | |
| Nickel | 16 | | 1.4 | " | " | " | " | " | " | |
| Lead | 2.2 | | 0.23 | " | " | " | " | 08/21/03 | EPA 6020 | |
| Antimony | ND | | 0.23 | " | " | " | " | " | " | UJ |
| Selenium | ND | | 0.45 | " | " | " | " | 08/22/03 | " | |
| Titanium | 360 | | 0.90 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Thallium | ND | | 0.090 | " | " | " | " | 08/21/03 | EPA 6020 | |
| Vanadium | 30 | | 0.45 | " | " | " | " | 08/11/03 | EPA 6010B | |
| Zinc | 40 | | 0.90 | " | " | " | " | " | " | J |

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 4, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Hexavalent chromium
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5
32D-SB06-15

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

| Date | Lab. Reference/ID | Analyte | %R (Limits) | Associated Samples | Flag | A or P |
|-----------|----------------------|------------------------|--------------|-----------------------------|-----------|--------|
| 8/15/2003 | CCV (ending) | Hexavalent chromium | 111 (80-110) | 32D-SB07-2.5 32D-SB06-15 | J detects | P |

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|---|---------------------|---------------------|----------------------|-----------------|----------------------------|--------|
| 32D-SB07-2.5 (32D-SB07-2.5 32D-SB06-15) | Hexavalent chromium | 66 (75-125) | 65 (75-125) | 2 (20) | J detects UJ nondetects | A |

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Wet Chemistry - Data Qualification Summary - SDG P308071**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|-----------------------------|---------------------|----------------------------|---------------|---|
| P308071 | 32D-SB07-2.5 32D-SB06-15 | Hexavalent chromium | J detects | P | CCV above criteria |
| P308071 | 32D-SB07-2.5 32D-SB06-15 | Hexavalent chromium | J detects UJ nondetects | A | Matrix spike % Recovery below control limits |

Aerojet RI/FS**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308071**

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 5, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Hexavalent chromium
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5
32D-SB05-7

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS

Wet Chemistry - Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

Aerojet RI/FS

Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 15, 2003
LDC Report Date: November 17, 20033
Matrix: Soil
Parameters: Hexavalent chromium
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308354

Sample Identification

10D-SS10
10D-SS21
10D-SS22

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

| Sample | Analyte | Total Days From Sample Collection Until Analysis | Required Holding Time (in Days) From Sample Collection Until Analysis | Flag | A or P |
|----------------------------------|---------------------|--|---|----------------------------|--------|
| 10D-SS10 10D-SS21 10D-SS22 | Hexavalent chromium | 41/3 | 30/7 | J detects UJ nondetects | P |

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|-------------------------------|---------------------|------------------|-------------------|--------------|----------------------------|--------|
| 10D-SS10 | Hexavalent chromium | 52 (75-125) | 54 (75-125) | 4 (20) | J detects UJ nondetects | A |

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Wet Chemistry - Data Qualification Summary - SDG P308354**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|----------------------------------|---------------------|----------------------------|---------------|--|
| P308354 | 10D-SS10 10D-SS21 10D-SS22 | Hexavalent chromium | J detects UJ nondetects | P | Analysis performed past holding time |
| P308354 | 10D-SS10 10D-SS21 10D-SS22 | Hexavalent chromium | J detects UJ nondetects | A | Matrix spike % Recovery below control limits |

Aerojet RI/FS**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308354**

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 14, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Hexavalent chromium
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308355

Sample Identification

11D-SNS09
11D-SNS08
11D-SNS07

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

| Sample | Analyte | Total Days From Sample Collection Until Analysis | Required Holding Time (in Days) From Sample Collection Until Analysis | Flag | A or P |
|-------------------------------------|---------------------|--|---|----------------------------|--------|
| 11D-SNS09 11D-SNS08 11D-SNS07 | Hexavalent chromium | 38/2 | 30/7 | J detects UJ nondetects | P |

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|-------------------------------|---------------------|------------------|-------------------|--------------|---------------------------|--------|
| 11D-SNS09 | Hexavalent chromium | 25 (75-125) | 24 (75-125) | 4 (20) | J detects R nondetects | A |

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Wet Chemistry - Data Qualification Summary - SDG P308355**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|-------------------------------------|---------------------|----------------------------|---------------|---|
| P308355 | 11D-SNS09 11D-SNS08 11D-SNS07 | Hexavalent chromium | J detects UJ nondetects | P | Analysis performed past holding time |
| P308355 | 11D-SNS09 11D-SNS08 11D-SNS07 | Hexavalent chromium | J detects R nondetects | A | Matrix spike % Recovery below 30% |

Aerojet RI/FS**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P308355**

No Sample Data Qualified in this SDG

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 15, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Hexavalent chromium
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P309311

Sample Identification

10D-SS10
10D-SS21
10D-SS22

Introduction

This data review covers three soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7196A for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994), as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section VII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- | | |
|------|--|
| U | Indicates the compound or analyte was analyzed for but not detected at or above the stated limit. |
| J | Indicates an estimated value. |
| R | Quality control indicates the data is not usable. |
| N | Presumptive evidence of presence of the constituent. |
| UJ | Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value. |
| A | Indicates the finding is based upon technical validation criteria. |
| P | Indicates the finding is related to a protocol/contractual deviation. |
| None | Indicates the data was not significantly impacted by the finding, therefore qualification was not required. |

I. Technical Holding Times

All technical holding time requirements were met with the following exceptions:

| Sample | Analyte | Total Days From Sample Collection Until Analysis | Required Holding Time (in Days) From Sample Collection Until Analysis | Flag | A or P |
|----------------------------------|---------------------|--|---|---------------------------|--------|
| 10D-SS10 10D-SS21 10D-SS22 | Hexavalent chromium | 66/0 | 30/7 | J detects R nondetects | P |

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Accuracy and Precision Data

a. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Analyte | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|---|---------------------|------------------|-------------------|--------------|---------------------------|--------|
| P309262-01 (10D-SS10 10D-SS21 10D-SS22) | Hexavalent chromium | 60 (75-125) | 16 (75-125) | 61 (20) | J detects R nondetects | A |

b. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Sample Result Verification

Raw data were not reviewed for this SDG.

VI. Overall Assessment of Data

Data flags are summarized at the end of this report.

VII. Field Duplicates

No samples in the SDG were identified as field duplicates. Therefore, this parameter was not evaluated.

VIII. Field Blanks

No samples in the SDG were identified as field blanks. Therefore, this parameter was not evaluated.

Aerojet RI/FS**Wet Chemistry - Data Qualification Summary - SDG P309311**

| SDG | Sample | Analyte | Flag | A or P | Reason |
|------------|----------------------------------|---------------------|---------------------------|---------------|---|
| P309311 | 10D-SS10 10D-SS21 10D-SS22 | Hexavalent chromium | J detects R nondetects | P | Analysis performed past holding time |
| P309311 | 10D-SS10 10D-SS21 10D-SS22 | Hexavalent chromium | J detects R nondetects | A | Matrix spike % Recovery below 30% |

Aerojet RI/FS**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG P309311**

No Sample Data Qualified in this SDG

ERM/Aerojet
Data Validation Reports
LDC# 0310-02F8 through 0310-02L8

Total Petroleum Hydrocarbons as Diesel

LDC

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: July 29, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Total Petroleum Hydrocarbons as Diesel
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308004

Sample Identification

37D-SB01-2.5

37D-SB01-6

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

X. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308004

No Sample Data Qualified in this SDG

Aerojet RI/FS

**Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary -
SDG P308004**

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308004
Reported:
08/19/03 16:23

Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B Sequoia Analytical - Petaluma

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|------------|-----|--------------------|-------|----------|---------|----------|----------|-------------------|-------|
| 37D-SB01-2.5 (P308004-03) Soil Sampled: 07/29/03 10:20 Received: 07/29/03 17:05 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 24 | | 5.0 | mg/kg | 1 | 3080068 | 08/05/03 | 08/07/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 174 % | | 52-133 | | | " | " | " | " | S-02 |
| 37D-SB01-6 (P308004-04) Soil Sampled: 07/29/03 10:39 Received: 07/29/03 17:05 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 6.2 | | 5.0 | mg/kg | 1 | 3080068 | 08/05/03 | 08/07/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 120 % | | 52-133 | | | " | " | " | " | |
| 37D-SB01-10 (P308004-05) Soil Sampled: 07/29/03 10:46 Received: 07/29/03 17:05 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080068 | 08/05/03 | 08/07/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 97 % | | 52-133 | | | " | " | " | " | |
| 37D-SB01-15E (P308004-06) Water Sampled: 07/29/03 11:00 Received: 07/29/03 17:05 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 0.050 | mg/l | 1 | 3080053 | 08/05/03 | 08/07/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 108 % | | 54-141 | | | " | " | " | " | |
| 37D-SB01-15 (P308004-07) Soil Sampled: 07/29/03 11:11 Received: 07/29/03 17:05 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 5.7 | | 5.0 | mg/kg | 1 | 3080068 | 08/05/03 | 08/07/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 119 % | | 52-133 | | | " | " | " | " | |
| 37D-SB01-20 (P308004-08) Soil Sampled: 07/29/03 11:32 Received: 07/29/03 17:05 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 18 | | 5.0 | mg/kg | 1 | 3080068 | 08/05/03 | 08/07/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 156 % | | 52-133 | | | " | " | " | " | S-02 |
| 37D-SB01-25 (P308004-09) Soil Sampled: 07/29/03 11:56 Received: 07/29/03 17:05 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080068 | 08/05/03 | 08/07/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 97 % | | 52-133 | | | " | " | " | " | |

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: Aerojet RI/FS
Collection Date: August 1, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Total Petroleum Hydrocarbons as Diesel
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308047

Sample Identification
32D-SB07-5
32D-SB07-10

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits, with the following exceptions:

| Spike ID (Associated Samples) | Compound | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|--|---------------|---------------------|----------------------|-----------------|-----------------------------|--------|
| P308047-09 (32D-SB07-5, 32D-SB07-10) | TPH as Diesel | 89 (60-140) | 161 (60-140) | 55 (30) | J detects, UJ nondetects | A |

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

X. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS**Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308047**

| SDG | Sample | Compound | Flag | A or P | Reason |
|---------|----------------------------|---------------|-----------------------------|--------|---|
| P308047 | 32D-SB07-5, 32D-SB07-10 | TPH as Diesel | J detects, UJ nondetects | A | Matrix spike % recovery and RPD above QC limits |

Aerojet RI/FS**Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary - SDG P308047**

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308047
Reported:
09/09/03 16:33

**Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-----|--------------------|-------|----------|---------|----------|----------|-------------------|-------|
| 32D-SB07-5 (P308047-02) Soil Sampled: 08/01/03 09:50 Received: 08/01/03 14:07 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/23/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 103 % | | 52-133 | | | " | " | " | " | |
| 32D-SB07-10 (P308047-03) Soil Sampled: 08/01/03 10:05 Received: 08/01/03 14:07 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/23/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 97 % | | 52-133 | | | " | " | " | " | |
| 32D-SB07-30 (P308047-04RE1) Soil Sampled: 08/01/03 11:15 Received: 08/01/03 14:07 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 5.2 | | 5.0 | mg/kg | 1 | 3080553 | 08/27/03 | 08/29/03 | EPA 8015B-SVOA | HT-03 |
| Surrogate: Octacosane | 80 % | | 52-133 | | | " | " | " | " | |
| 32D-SB07-35 (P308047-05) Soil Sampled: 08/01/03 11:40 Received: 08/01/03 14:07 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 16 | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/23/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 153 % | | 52-133 | | | " | " | " | " | S-02 |
| 32D-SB07D-35 (P308047-06) Soil Sampled: 08/01/03 11:40 Received: 08/01/03 14:07 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/23/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 77 % | | 52-133 | | | " | " | " | " | |
| 32D-SB07-40E (P308047-07) Water Sampled: 08/01/03 11:50 Received: 08/01/03 14:07 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 0.052 | | 0.050 | mg/l | 1 | 3080087 | 08/06/03 | 08/07/03 | EPA 8015B-SVOA | B |
| Surrogate: Octacosane | 106 % | | 54-141 | | | " | " | " | " | |
| 32D-SB07-40 (P308047-08) Soil Sampled: 08/01/03 12:05 Received: 08/01/03 14:07 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 30 | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/23/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 156 % | | 52-133 | | | " | " | " | " | S-02 |

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11/14/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 4, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Total Petroleum Hydrocarbons as Diesel
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308071

Sample Identification

32D-SB07-2.5
32D-SB06-15

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

| Sample | Surrogate | %R (Limits) | Compound | Flag | A or P |
|--------------|------------|--------------|----------|-----------|--------|
| 32D-SB07-2.5 | Octacosane | 366 (52-133) | Diesel | J detects | A |

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

| Spike ID (Associated Samples) | Compound | MS (%R) (Limits) | MSD (%R) (Limits) | RPD (Limits) | Flag | A or P |
|-------------------------------------|----------|---------------------|----------------------|-----------------|-----------|--------|
| P30847-9 | Diesel | 89 (62-103) | 161 (62-103) | 55 (35) | J detects | A |

Since the parent sample was not one of the samples reviewed in this SDG, no data were qualified.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

X. Field Blanks

No samples were identified as a rinsate. Therefore this parameter was not evaluated.

Aerojet RI/FS**Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308071**

| SDG | Sample | Compound | Flag | A or P | Reason |
|---------|--------------|----------|-----------|--------|--------------------------------|
| P308071 | 32D-SB07-2.5 | Diesel | J detects | A | Surrogate above control limits |

Aerojet RI/FS**Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary - SDG P308071**

No Sample Data Qualified in this SDG

Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308071
Reported:
09/09/03 16:50

Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B
Sequoia Analytical - Petaluma

| Analytic | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|---|--------|-----|--------------------|-------|----------|---------|----------|----------|-------------------|-------|
| 32D-SB07-2.5 (P308071-01) Soil Sampled: 08/04/03 09:05 Received: 08/04/03 14:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 14 | | 3.1 | mg/kg | 1 | 3080254 | 08/14/03 | 08/25/03 | EPA 8015B-SVOA | usual |
| Surrogate: Octacosane | 366 % | | 52-133 | | | " | " | " | " | S-02 |
| 32D-SB07-15 (P308071-02) Soil Sampled: 08/04/03 09:20 Received: 08/04/03 14:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 123 % | | 52-133 | | | " | " | " | " | |
| 32D-SB06-2.5 (P308071-03) Soil Sampled: 08/04/03 12:05 Received: 08/04/03 14:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 6.0 | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 154 % | | 52-133 | | | " | " | " | " | S-02 |
| 32D-SB06-10 (P308071-04) Soil Sampled: 08/04/03 12:30 Received: 08/04/03 14:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 126 % | | 52-133 | | | " | " | " | " | |
| 32D-SB06-15E (P308071-05) Water Sampled: 08/04/03 12:40 Received: 08/04/03 14:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 0.078 | | 0.052 | mg/l | 1 | 3080174 | 08/11/03 | 08/18/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 97 % | | 54-141 | | | " | " | " | " | |
| 32D-SB06-15 (P308071-06) Soil Sampled: 08/04/03 12:45 Received: 08/04/03 14:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 131 % | | 52-133 | | | " | " | " | " | |
| 32D-SB06-25 (P308071-07) Soil Sampled: 08/04/03 13:10 Received: 08/04/03 14:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080254 | 08/14/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | 121 % | | 52-133 | | | " | " | " | " | |

C1
11/17/03

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Aerojet RI/FS
Collection Date: August 5, 2003
LDC Report Date: November 17, 2003
Matrix: Soil
Parameters: Total Petroleum Hydrocarbons as Diesel
Validation Level: EPA Level III Equivalent
Laboratory: Sequoia
Sample Delivery Group (SDG): P308126

Sample Identification

32D-SB05-2.5
32D-SB05-7

Introduction

This data review covers two soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 8015 modified for Total Petroleum Hydrocarbons (TPH) as Diesel.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (October 1999), as there are no current guidelines for the method stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- | | |
|------|--|
| U | Indicates the compound or analyte was analyzed for but not detected at or above the stated limit. |
| J | Indicates an estimated value. |
| R | Quality control indicates the data is not usable. |
| N | Presumptive evidence of presence of the constituent. |
| UJ | Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value. |
| A | Indicates the finding is based upon technical validation criteria. |
| P | Indicates the finding is related to a protocol/contractual deviation. |
| None | Indicates the data was not significantly impacted by the finding, therefore qualification was not required. |

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

Initial calibration of compounds was performed as required by the method.

The percent relative standard deviations (%RSD) of calibration factors for compounds were less than or equal to 20.0%.

b. Calibration Verification

Calibration verification was performed at required frequencies. The percent differences (%D) of amounts in continuing standard mixtures were within the 15.0% QC limits.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No total petroleum hydrocarbons as diesel contaminants were found in the method blanks.

IV. Accuracy and Precision Data

a. Surrogate Recovery

Surrogates were added to all samples and blanks as required by the method. All surrogate recoveries (%R) were within QC limits.

b. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

c. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

V. Target Compound Identification

Raw data were not reviewed for this SDG.

VI. Compound Quantitation and CRQLs

Raw data were not reviewed for this SDG.

VII. System Performance

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

IX. Field Duplicates

No samples were identified as field duplicates. Therefore this parameter was not evaluated.

X. Field Blanks

No samples were identified as field blanks. Therefore this parameter was not evaluated.

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG

Aerojet RI/FS

Total Petroleum Hydrocarbons as Diesel - Laboratory Blank Data Qualification Summary - SDG P308126

No Sample Data Qualified in this SDG



Environmental Resources Management
2525 Natomas Park Drive, Suite 350
Sacramento, CA, 95833

Project: Aerojet RI/FS
Project Number: N/A
Project Manager: Bruce Lewis

P308126
Reported:
09/11/03 18:20

**Total Petroleum Hydrocarbons as Diesel & others by EPA 8015B
Sequoia Analytical - Petaluma**

| Analyte | Result | MDL | Reporting Limit | Units | Dilution | Batch | Prepared | Analyzed | Method | Notes |
|--|--------|-------|--------------------|-------|----------|---------|----------|----------|-------------------|-------|
| 32D-SB06-35 (P308126-01) Soil Sampled: 08/04/03 14:50 Received: 08/05/03 13:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080306 | 08/18/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | | 83 % | 52-133 | | | " | " | " | " | |
| 32D-SB06-40 (P308126-02) Soil Sampled: 08/04/03 15:10 Received: 08/05/03 13:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080306 | 08/18/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | | 87 % | 52-133 | | | " | " | " | " | |
| 32D-SB06-45 (P308126-03) Soil Sampled: 08/04/03 15:30 Received: 08/05/03 13:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080306 | 08/18/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | | 95 % | 52-133 | | | " | " | " | " | |
| 32D-SB05-2.5 (P308126-04) Soil Sampled: 08/05/03 10:15 Received: 08/05/03 13:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080306 | 08/18/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | | 95 % | 52-133 | | | " | " | " | " | |
| 32D-SB05-7 (P308126-05) Soil Sampled: 08/05/03 10:25 Received: 08/05/03 13:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080306 | 08/18/03 | 08/25/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | | 90 % | 52-133 | | | " | " | " | " | |
| 32D-SB05-10 (P308126-06) Soil Sampled: 08/05/03 10:30 Received: 08/05/03 13:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | 6.7 | | 5.0 | mg/kg | 1 | 3080306 | 08/18/03 | 08/26/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | | 105 % | 52-133 | | | " | " | " | " | |
| 32D-SB05-15 (P308126-07) Soil Sampled: 08/05/03 10:45 Received: 08/05/03 13:17 | | | | | | | | | | |
| Diesel Range Organics (C10-C28) | ND | | 5.0 | mg/kg | 1 | 3080306 | 08/18/03 | 09/02/03 | EPA 8015B-SVOA | |
| Surrogate: Octacosane | | 95 % | 52-133 | | | " | " | " | " | |